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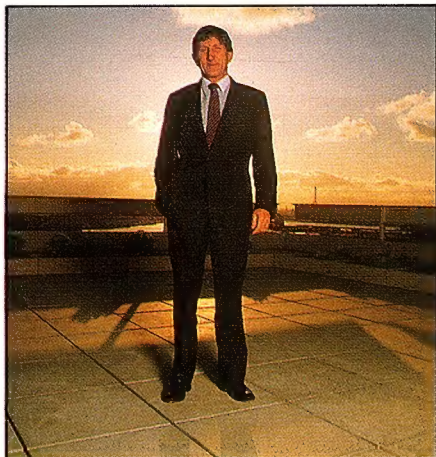
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Publisher: Barry Telfer. **National sales manager:** Sally Davis. **Victorian manager:** Mark Christian.

Advertising offices — SYDNEY: Sally Davis (02) 235 6524, Angela Ryan, 1st Floor, 19 Hamilton Street, (02) 235 6619. MELBOURNE: Mark Christian, 4th Floor, 392 Little Collins Street, (03) 67 6231.

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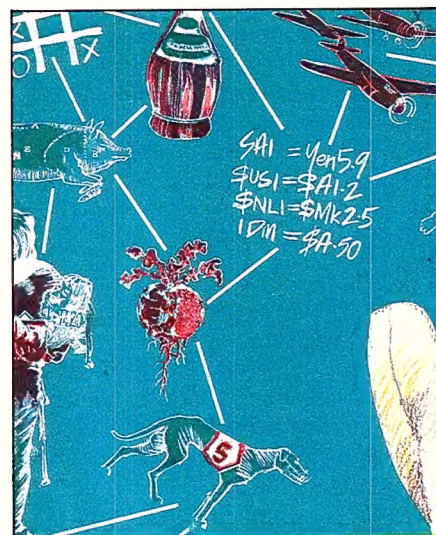
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Today's Computers is a BRW Publications production. **Group managing editor:** Robert Gottlieb. **Group publisher:** Steven Congerton.

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KEYSTROKES

During recent months, computer hardware manufacturers and dealers have been swamping the market with a whole new generation of personal computers. Manufacturers of all the new machines tell us that they are ahead of the competition in terms of their ability to solve the problems of business. They claim they provide the efficiency much needed by business in this country.

We have heard these claims often during the past few years as the market for personal computers has changed dramatically. As we've noted before, this has largely been as a result of the adoption by business of what was previously regarded as a machine for the classroom and home.

In this month's *Today's Computers* we decided to test the corporate acceptance of personal computers; to put the claims of the manufacturers and the dealers to the test. And what better place to start than at the very top of the corporate totem with the chief executives.

Editor Graeme Kemlo and his team set about quizzing the gurus of Australia's 60 top sales performers in the annual list of our sister publication, *Business Review Weekly*. The result is an interesting dichotomy within our corporate giants.

Our exclusive survey shows that the personal computer has yet to command respect in the corridors of corporate power. But times are changing fast.

In our discussions with the respective chief executives and finance directors of the top performing companies, it became clear that direct use of new technology at that level of management is

approaching fast. Most of those interviewed who didn't use personal computers directly admitted that their use was widespread in the next echelon of tomorrow's corporate leaders.

The major reason given for their absence today is that it is quicker to lift a telephone and ask for information from an underling with a personal computer. As well, many admitted that their age and computer illiteracy were a major hindrance.

But in this revealing survey are some inklings of the future tools of the chief executive. Take Humes's managing director, Ray Hicks, who decided to improve the general level of computer awareness among his senior team by introducing Telecom's Computerphone

into the office. The result was an enlightened view of the value of personal computers by all concerned. Electronic messaging, access to Viatel and other data bases, as well as the use of spreadsheets in forecasting and cash analysis have made their way into the top corporate echelon of Humes.

Caltex chief executive John McPhail is the only director of the oil giant to directly use a computer at work and at home. He believes that as communication becomes more important in major companies, senior management will view personal computers more favorably.

Senior executives who take the introduction of new technology for granted should turn to the fascinating report by Tony Thomas starting on page 52. The power and influence of computer technology unfolds in the form of frightening business case studies.

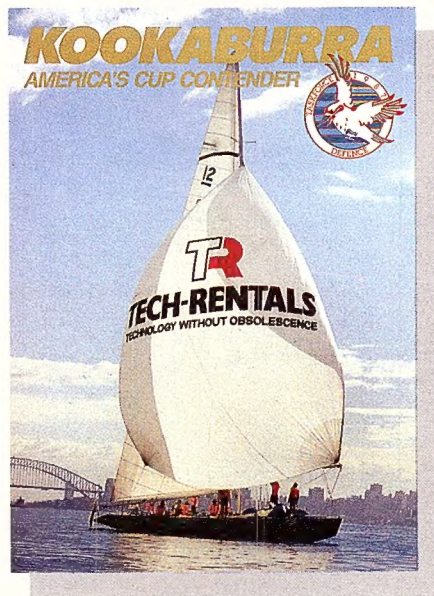
Rarely have I seen the normally mild-mannered Thomas as stunned by a seminar as on his return from hearing Harvard professor Warren McFarlan speak. In Thomas's words, the address revealed "the awesome power of the computer in killing off your competition".

From how a competing airline reservations system destroyed the now collapsed Braniff Airlines in the US, to a hospital products supplier which conquered the market leader by simply introducing a convenient computer ordering network to customers, McFarlan outlines how it is imperative for all management to keep up to date with new technology to protect their companies against the competition.



David Koch, managing editor

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BUSINESS COMMENT

When all of us saw Paul Keating's tax package, our first reaction was, "How will it affect me?" Most executives had a parcel of fringe benefits because it was the only way businesses could overcome the crippling marginal rates of tax which had been made obsolete by the high inflation rates.

By far the most savage blow was delivered to entertainment expenses — particularly as the ban on deductibility dated from the day after Keating's speech. For restaurant owners relying on the business trade the effect was devastating, although, as I have explained in these columns before, the cleverer operators will find a way around the problem.

Restaurant owners were not nearly as astute as the motor manufacturers. Both groups were clearly in the firing line in the original "option C" proposals.

The final entertainment measures were tougher than those first proposed because they were introduced immediately and not on July 1 when most of the curbs came into effect.

By contrast the motor makers did much better. An annual 11 per cent non-deductible tax on the cost of a car is to be imposed if no log book is kept.

Because it is not deductible, the tax is in effect a charge of more than 22 per cent. (It will promote rapid turnover of vehicles.) Nevertheless, once you pay that tax the commissioner recognises that there will be some private use.

This is precisely the attitude the Treasurer refused to take with entertainment — everything was thrown out with the bathwater. The motor makers were helped by the fact that they had been guaranteed by the government, as part of the motor plan, that there would be no change in the rules. With so much at stake, Keating was prepared to compromise.

The restaurant owners showed few of the lobbying skills of the motor makers. They inserted a few advertisements, but because people felt guilty about some of the lunches they were claiming, the campaign did not get off the ground. What the restaurant trade should have done was find a com-

promise, perhaps along the same lines as that achieved for the motor industry. That way the whole entertainment industry might not have been put into a crisis.

The restaurant owners muffed the campaign because they were too divided and didn't come up with a plan. What they must now do is find a compromise and at least try to have it adopted as Liberal policy. Restaurant owners who are still around when there is a change in government will be able to take advantage.

But as a total community we will find our way around the entertainment problem, particularly as the basic thrust of what Keating is trying to do — reduce marginal tax rates — is in the national interest.

In a year or two, when we look back on the measures, I think we will find that the most devastating and badly executed one was the capital gains tax.

For a long time there has been a strong case that capital should take some of the tax burden from income. What we might have done was take a leaf out of the Americans' book and move towards a low flat rate tax on capital gains. Instead we went for a system that suited the minds of public servants — a tax that did not operate until inflation was covered but then was based on marginal tax rates.

In Australia we want people who will take risks and help our country forge ahead. Those who risk all expect rewards well above the inflation rate. A capital gains tax that is based on income tax rates takes away all the incentive to take big risks, although it might suit large companies and those who invest in shares.

The clear loser was small business, which also received another blow.

Keating was trying to soften the impact of the basic capital gains tax so he came up with the idea that all assets presently owned should not be subject to the tax. Immediately he removed the main reason for having such a tax, ie having more of the tax burden shared by the capital rather than income generation. But what he did not appreciate was that although he would not raise much money, he would

distort the whole pattern of Australian development.

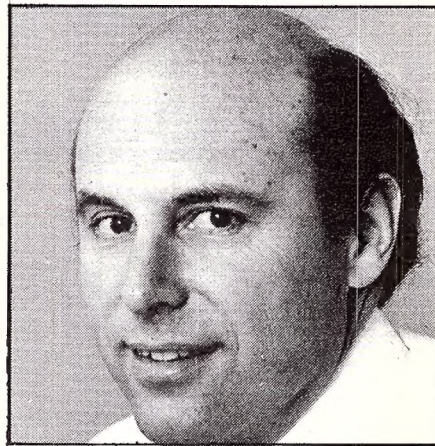
Suddenly, buyers and sellers of assets and businesses are not in the same position. A seller cannot replace the asset being sold with one that will be free of capital gains tax. A buyer of an asset must pay capital gains tax while the person he is purchasing it from is free of the tax. This will lock people into businesses for too long. In a fast moving society you need mobility of capital. Keating has frozen it.

My guess is that even before the next election Paul Keating will find a way to correct the mistake. If he does not, John Howard will be delighted to do it for him.

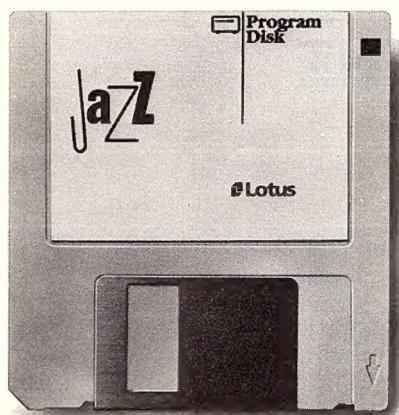
One of the best features of the Keating proposals is that, leaving aside the effects on profitability, they will make for a much healthier share market.

Whereas a capital gains tax based on marginal tax rates might deter a high risk entrepreneur, such a tax would please a buyer of a stock like BHP — gains up to inflation are tax free, as is dividend income.

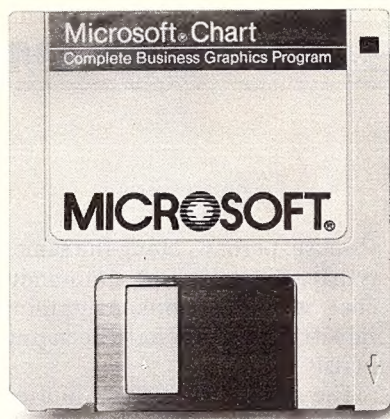
All other things being equal, we are likely to see a further increase in the number of stocks on both the first and second boards.



Robert Gottlieb
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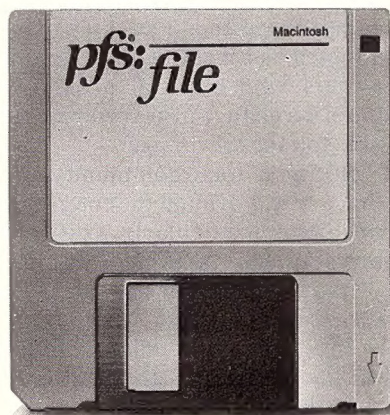
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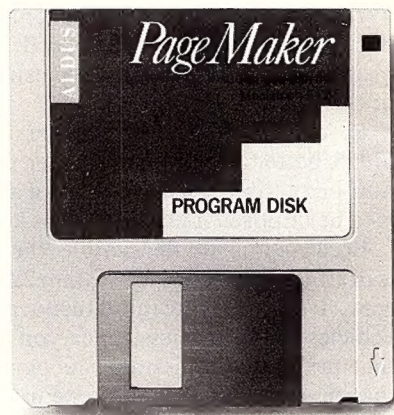
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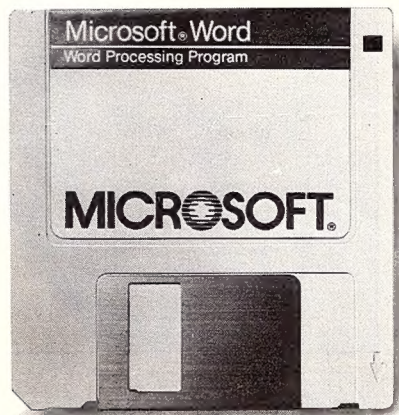
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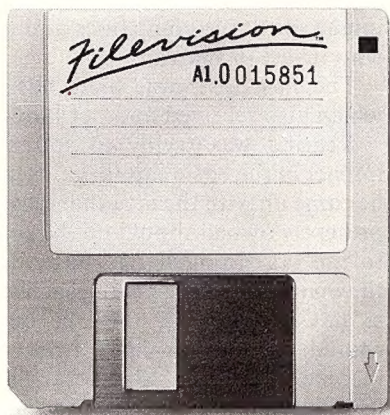
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Today's Computers, October 1985

AP 183/Palace/R



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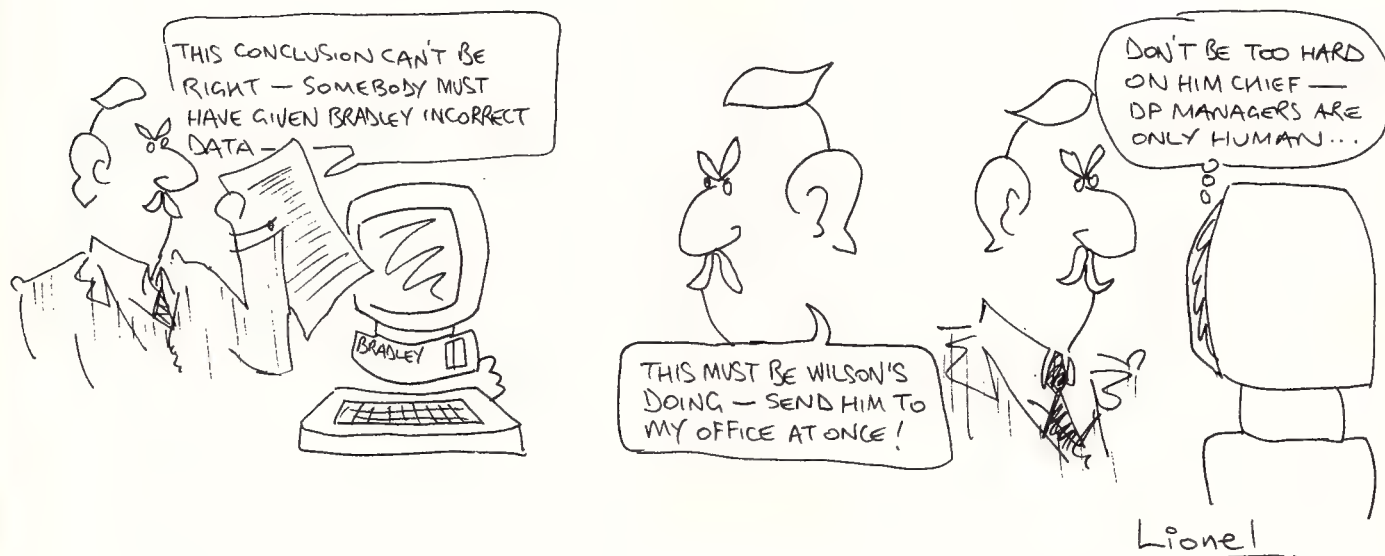
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 Memory size _____ Hard Disk (Y/N) Printer (Y/N) Modem (Y/N)

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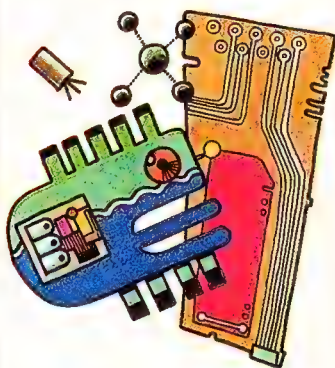


Mapping the future

Sperry Corporation is making inroads into the world of personal computing with the introduction of the *Personal Mapper System*. This fourth generation language enables programmers and novices to design applications. Previously the fourth generation language, Mapper, was only available on Sperry mainframes. *Personal Mapper* uses a hundred plain English commands and Carol Crawford, Sperry's applications product manager, says it makes data available to users in a logical and natural fashion. The editor of PC America, Bill Machrone, believes *Personal Mapper* will point the way for future applications on personal computers. "Mapper brings a fourth generation language down to the level of PCs. It has the dual benefit of making the PC mainframe compatible —the

PC can do mainframe work or be used as a low cost development system for mainframe applications" he says.

Personal Mapper is an extension board which fits on to the Sperry PC and IBM hard disk compatibles. The Sperry PC has access to the 512K of memory on



the extension board. The *Mapper* costs \$4250 including sales tax and all software. The standard package includes a serial emulator program to facilitate expansion. Dick Simpson, Sperry's marketing director, says the introduction of the system represents a breakthrough

in language systems. "For the first time personal computer users can take advantage of this unprecedented power and flexibility which until now have only been available in a Sperry mainframe environment."

Crawford says the package will be most attractive to corporate clients for local area networking. The *Mapper* can be shared by another two PCs with only the host machine needing a hard disk. Information can be transferred from *Mapper* to MS-DOS, or from MS-DOS to *Mapper*, and the system is compatible with other Sperry *Mapper* products. — Julie Power

Advance in new direction

Communications, the new direction the personal computer market is always supposed to be taking but never quite seems to manage, is showing some signs of life in the UK. The Bristol Software Factory, previously responsible for the successful Silicon Office

package, has announced a combined word processor and communications package called *Telewriter*. The marketing of the package involves some interesting alliances. Each package will come with two months trial subscription to Telecom Gold, British Telecom's electronic mail bureau, and EasyLink. Similar deals are increasingly being made between modem manufacturers and communications services. British Telecom has also purchased a company called Program Express, which last year announced a system for electronically distributing



software to retailers. The retailer maintains a terminal and can download a program to tape or disk from a central computer. Each terminal keeps track of the number of copies sold and the central computer can automatically total sales and run off invoices to the retailer. The dealer obviously avoids problems with over or understocking the now vast range of titles available, particularly in the games market.

A new hopeful in the electronic mail market is the Unix system called *Ceemore* which, in keeping with Unix philosophy, makes the intricacies of communications service operation obvious to the user.

Messages may be passed from mailbox to mailbox on a multi-user system, and also transparently routed to or received from external communications facilities like EasyLink and Telecom Gold.

—Ian Scales

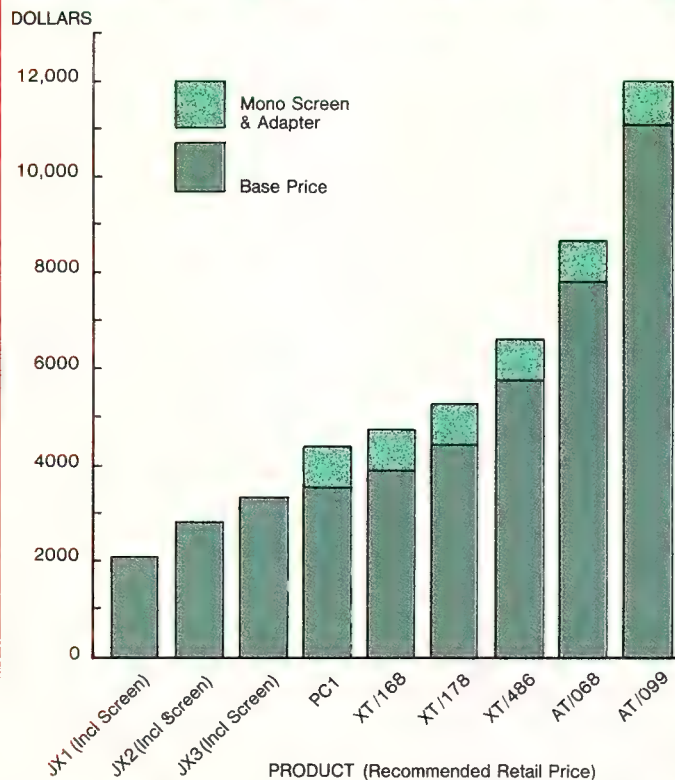
JX signals end of the PC

IBM unveiled its new personal computers last month — the JX family — and left observers convinced that it will soon discontinue the PC. IBM now offers a range of nine products in its PC family, from the \$2115 JX1 to the \$11,256 AT 99. The PC, the machine that set IBM on the road to dominating the personal computer market when it came out in 1981, is the misfit in the line-up. It is squeezed in between the JX3 and a new low end XT 168, and IBM took the unusual step of bumping its price up by 10 per cent. The historic machine looks destined for the scrap heap.

The JX is made by Matsushita in Japan. It was heralded as an educational unit but the three machines span the school, home and small business markets. The JX1, suitable for classroom use, comes with 64K RAM, two cartridge slots, a color terminal and detachable keyboard. The JX2 is designed for the home and

Brian Finn, says the company will promote the JX as a business machine. "The technology of the JX is a significant step forward from earlier PC products," he says. "It combines a smaller, more efficient design with the convenience and flexibility of the 3½-inch diskette, yet it is powerful enough to handle every

PC Family pricing relativity



small business markets and comes with 128K RAM and a 7½ inch disk drive. The list price is \$2861.

The JX3 is available with a dual disk drive and 256K RAM. It sells for \$3365. There is a substantial list of software for the JX including such business packages as *Multiplan*, *Displaywrite* and *SuperC*.

IBM's managing director,

demanding business and graphics application."

The existing 486 model XT will be supplemented with two lower-priced models — the 168 and the 178. The 168 comes with 256K of memory and a single 360K disk drive and sells for \$3942. The 178 comes with 256K of memory and two 360K disk drives and sells for \$4456.

— John Kavanagh

Atari to challenge Macintosh

Atari's new Macintosh look-alike, the 520 ST, will be distributed in Australia by Mobex Pty Ltd the distributor of Casio calculators, hand held computers and PCs. Mobex expects to have the Atari, which US observers expect to give the Mac a shake-up, by November if all the US Government paperwork is cleared quickly.

David Lipman, managing director of Mobex, says the company is setting up a new division to handle Atari in Australia. Along with the 520 ST, Mobex will distribute the 800 XL, a 64K RAM machine, and the 130 XE, a 128K RAM machine, both intended to compete with Commodore in the home market.

But the big interest will be in the 520 ST which will operate with GEM, the interface developed by Digital Research to emulate the style of the Mac. Equipped with a color screen and keenly priced, the Atari should give Mac some competition.

Apple has not ignored the development of the new Atari or the Commodore Amiga, a similar type of machine. In its release of new products last month, Apple showed off a new version of the Apple IIe with an 800K disk drive, large color monitor and Imagewriter II color printer. The package also comes with the Mac interface so that users can use a mouse and the Mac's screen display on the Apple IIe. Apple intends to attack any low priced contenders with this product.

— John Kavanagh

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The real test in choosing a printer is print quality. At a glance, the quality of every printout from every Canon printer is perfectly clear, from graphs and charts in up to seven shades, to the near letter quality of dot matrix.

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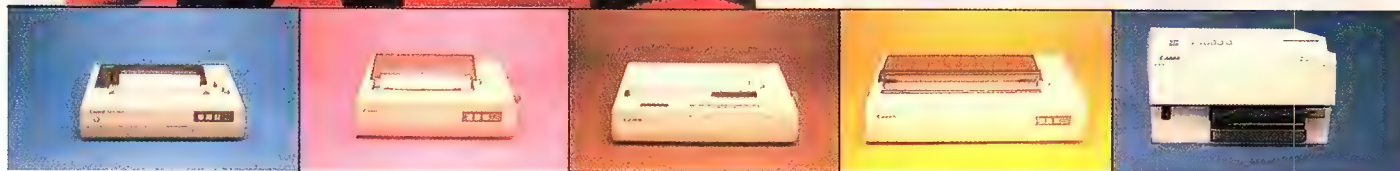
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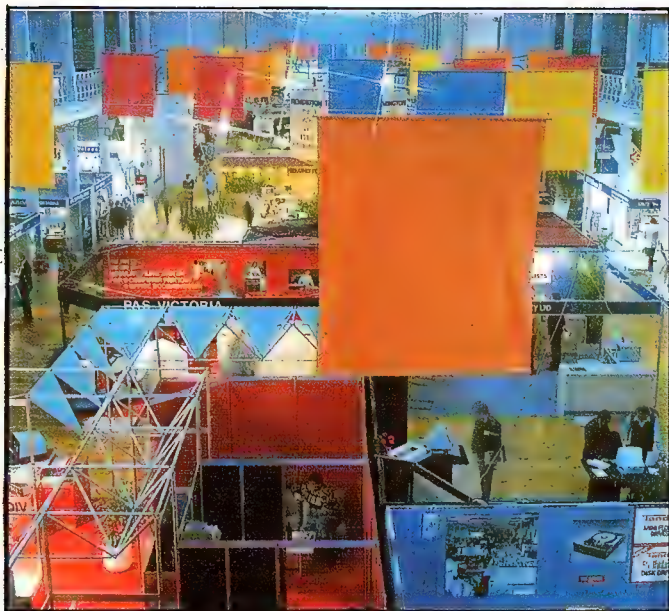
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NEWS



Show down, but not out

Reports of the death of the big computer show, following a quiet week at Melbourne's recent first Pan Pacific Computer Conference, are an exaggeration. But there is no doubt that many computer companies will take a hard look before going into another general computer exhibition. PPCC 1, which incorporated the Australian Computer Society's 12th conference, was not the disaster a number of reports have suggested. Riddell Exhibition Promotions, the show's organiser, says 20,000 registered visitors came through the four-day exhibition. This was a smaller number than in the two previous ACS Australian Computer Conferences, which attracted crowds of more than 30,000. Peter Petherick, Riddell's marketing manager, says this year's turnout was enough for the show to make money and for many

companies to report good business on their stands. "We have spoiled our exhibitors because of previous ACS shows. Twenty thousand would be an exceptional turnout at

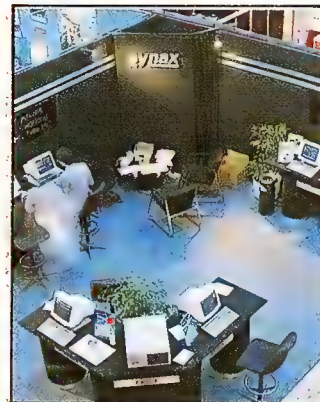


any other trade show, but we have set a precedent which is hard to live up to every year," Petherick says. Even so, several big companies did not exhibit because they thought the show was not the right marketing vehicle and others came away disillusioned with big shows. Geoff Stuart, the marketing communications manager

for Hewlett-Packard, says the company did not enter the show because it felt it was not getting a good return from general exhibitions. "The computer world is more fragmented. We believe our money would be better spent participating in special interest shows, like Automach, or running in-house events and seminars. We are happy with some Just In Time manufacturing seminars we have run recently. Shows like PPCC 1 try to appeal to a group that is too broad," he says. Other companies to drop out of the show were Burroughs and Digital Equipment Australia. Digital has not ruled out participation in future shows but it decided not to participate this year because it had recently concluded a number of in-house shows. "Shows will have to fit in with our marketing at the time," a Digital spokesman says. "To make those big shows work for you you have to spend a lot of money and tie up a lot of people, and you have to present something that will grab attention."

The sums spent by companies on large stands vary from \$50,000 to \$100,000, taking in the hire of the stand, constructing a display, travel expenses, overseas guests, functions and tying up staff for weeks. Some exhibitors thought it was money not well spent. One exhibitor, Lionel Singer, left the show vowing never to participate in another. Jock O'Keeffe, Data General's marketing manager, says his company is reviewing its approach. "We can do four of our own solutions showcases for the price of one exhibition," he says.

Petherick agrees that there are too many computer shows, but he believes one major show will survive. This will be the ACS's Australian Computer Conference



because it is firmly established as the country's leading computer event. The show's publicity officer, *Computerworld* publisher Susan Coleman, says the show and conference are highly regarded internationally and generate a lot of press coverage and interest in computing and the computer industry. "We had 85 press registrations and our greatest representation of delegates from overseas. There is more interest in computing



than there has ever been and everyone looks to this event to see what is happening in the industry," she says. — John Kavanagh

Canon computer judged the best

*See "Showdown
for the Crown" in
June issue of
TODAY'S COMPUTERS.

In a showdown to find the best IBM-Compatible PC, a panel of experts in *Today's Computers** selected Canon from the 12 leading contenders, including IBM.

Here's what the experts had to say about the Canon A-200.

MECHANICS "And when we opened it up—a very quick and easy process—we were stunned. The machine is like a polished jewel. All boards are beautifully made—Drummond calls them works of art." "Unimpeachable construction quality."

QUIETNESS "The disk drives—Canon's own—are so quiet you find yourself checking the disk lights to make sure something is happening."

SCREEN AND KEYBOARD "It has a top screen

and excellent keyboard that feels 'right.'"

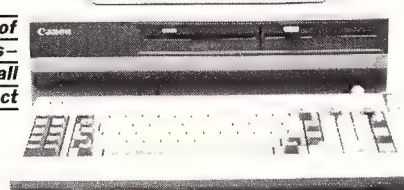
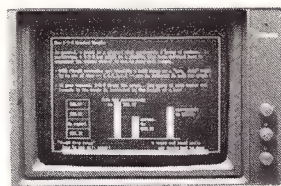
PROCESSOR SPEED

"The 8086 chip is inherently faster than the 8088 found on the majority of machines."

PRICE "And the Canon sells for \$4275 making it one of the cheapest machines in the collection."

CORPORATE "The company is already big in cameras, photocopiers, and laser printers. We wonder how long it will be before it has the same status in Computers."

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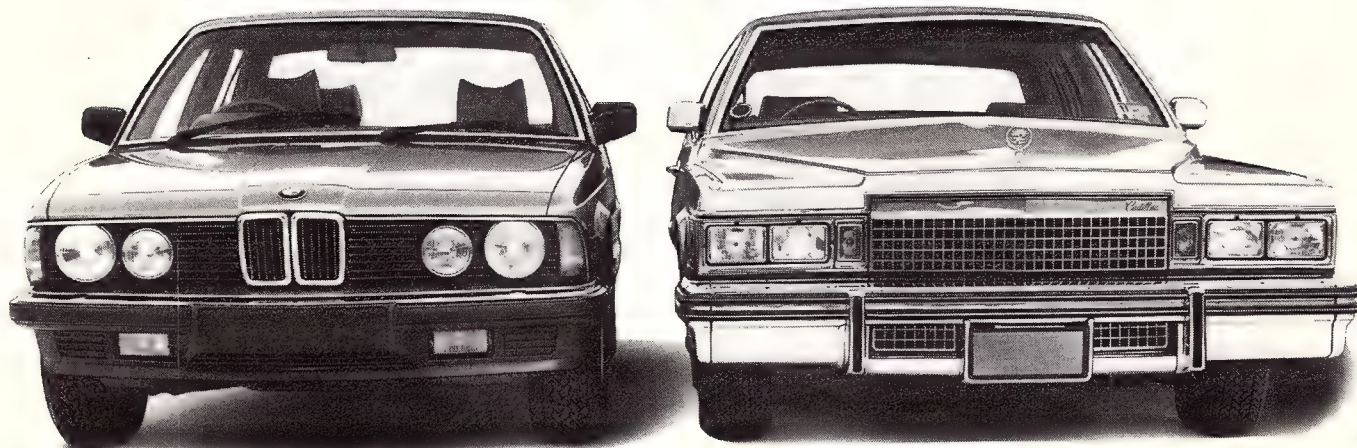


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Then four people, sitting in their own offices, can work independently at their own ICL, each using any of up to four of our

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If you'd like a demonstration of the *European* small business computer, contact your nearest ICL Traderpoint dealer today.

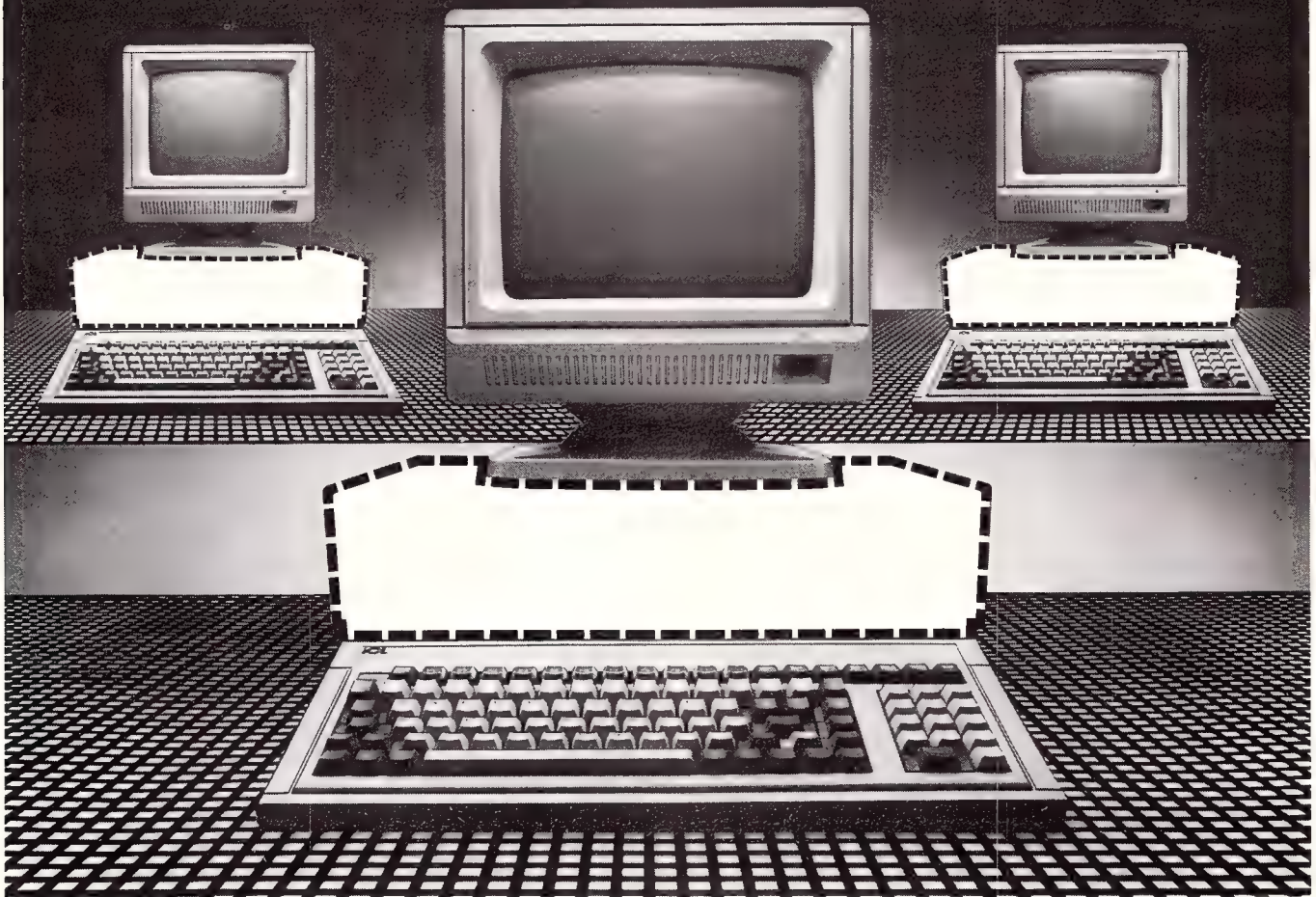
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John Bevins ICL22Today's Computers, October 1985

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So that kind of technology, at this kind of price, has made ICL com-

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*Prices as listed in 'Today's Computers', 'Hardware Buyers Guide', May 1985.

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Is IBM AT compatible with IBM?

Is the IBM AT, Big Blue's new top of the range personal computer, IBM compatible? Yes, but not 100 per cent compatible was IBM's answer to this much asked question at PPCC 1. IBM says the only software that will not transfer from the PC and XT to the AT is time-dependent software. The incompatibility lies in the way time-dependent packages rely on the computer's clock speed to operate.

Because the PC and XT run at different speeds to the AT, time-dependent packages cannot be transferred. Most time-dependent packages are games, so IBM does not expect major problems for AT users.

IBM says nearly all other software can be transferred to the AT without detriment to the data in the package. The problem is that this software will not allow the AT to perform at high levels. There are two reasons for this: the 80286 chip in the AT has an expanded instruction set over the conventional 8088, which can only be fully exploited with software written for the more powerful processor; and the DOS 3.1 which IBM is using as the machine's operating system has file sharing, file locking and virtual disk functions, to cater to its networking capabilities, which expand the machine's RAM beyond the standard 640K — again these can only be fully exploited with software written under DOS 3.1. What it all means to users is that if they stick their XT disks, written on DOS 2.0,

into an AT, the AT will only run like a fast XT — a very modest gain for the investment of \$15,000. The question of the AT's compatibility was a source of confusion at the show. It was evident on the Kaypro stand, where none of the four AT-compatibles on display came with an operating system. Kaypro thinks it is better if the user decides what to run on the machines.

Other suppliers hope to take advantage of the confusion. MPA was showing the Bullet Board, which promises AT performance on an XT. The product does not produce an AT clone; it gives an XT the extra speed and power of the AT by replacing the XT's 8088 processor with an 80286 processor, and it boosts the maximum on-board memory of the XT from 640K up to one megabyte. While it gives the performance characteristics of the AT it remains fully XT compatible, resolving any problem with software. This processing is called retrofitting, and there will be a lot more of it before long.

— John Kavanagh

More disk space

The new Apple releases of a 3½ inch, high density disk drive and a one megabyte memory expansion card are destined to secure the place of Apple II computers in professional environments. The first of these dual power enhancements overcomes a traditional limitation of the II series micros — lack of disk space.

Smaller and quieter than the Macintosh external drive, the new Apple II UniDisk 3

drive allows 800K of program or data information to be packed onto a single pocket-sized mini floppy — more than five times the capacity of the standard Apple 5¼ inch disks. The UniDisk ProDOS-based system will now permit the development of more powerful business programs for the world's most-used computer.

Manzanita's accounting software, which previously required a hard disk, is being revised for this new system. UniDisk 3.5 is

be swapped between alien programs.

The Macintosh has not been forgotten in Apple's line up of new product releases. The Hard Disk 20 is an external, 3½ inch Winchester disk drive for connection to the standard disk drive port. It can store as much information as 50 Mac floppy disks. Only seven and a half centimetres high, this 20 megabyte unit has the same footprint as the Macintosh and is designed to fit under the computer.

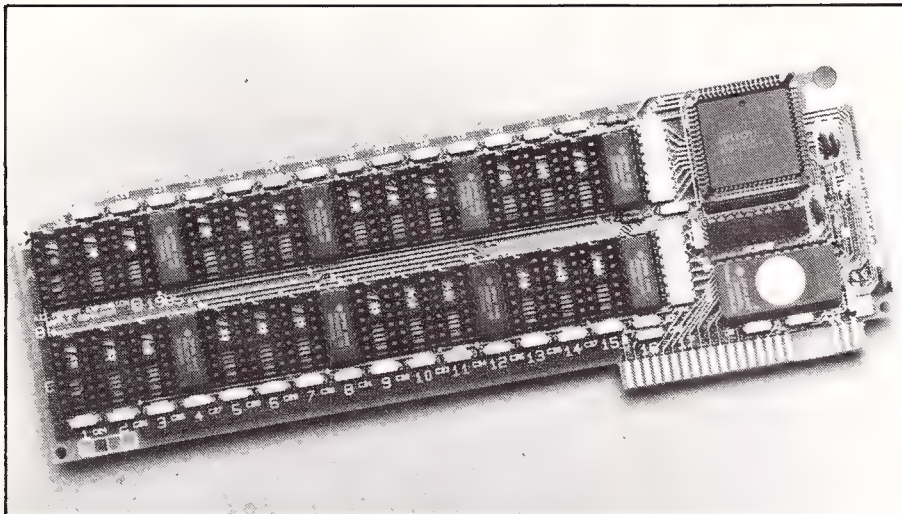


The Apple 20MB personal hard disk fits beneath the computer

available for all Apple II computers. Bundled with UniDisk 3.5 is *MouseDesk*, a desktop program similar to the Mac's *Finder*. Requiring a minimum of 128K of (Ile or Ilc) memory, the program provides an icon-based environment for manipulating multiple programs and files, using a mouse or keystrokes. *MouseDesk* allows users to quickly move from one program to another, without re-booting their system. The software also allows data to

An expansion port at the back of this hard disk unit allows a second hard disk or external floppy drive to be connected to the system. Apple Switcher is a new Mac software utility that allows users to work with several individual programs in an "integrated" manner. Tailored integrated applications can be created, combining up to eight separate programs. Microsoft has included a Switcher document with its *Excel* spreadsheet program.

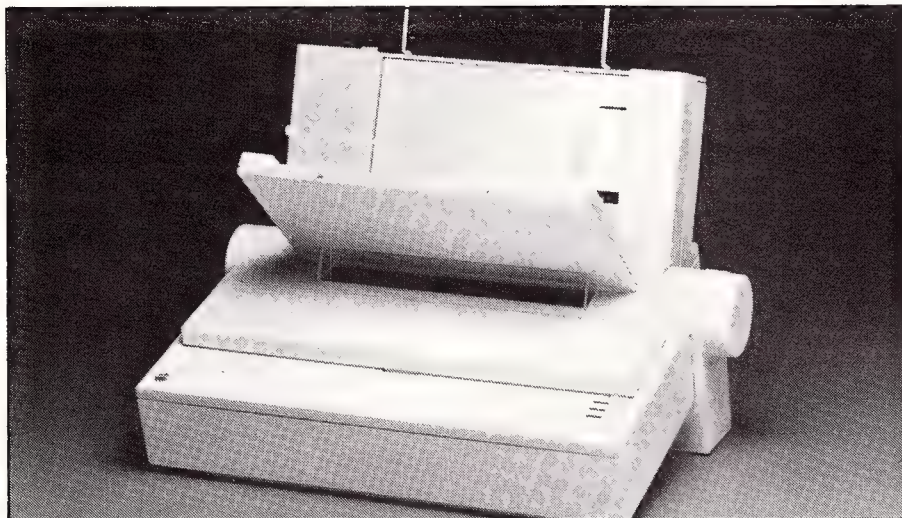
— Neil Munro



Apple II memory expansion card fits any standard slot in Apple II, II+ or IIc

Introducing the FatApple: the Apple II Memory Expansion Card now brings an eight-fold increase in user memory to all but one of the II series of computers. This one megabyte add-on memory card plugs into any slot (except 3) on any Apple II II+ or IIe, but because of its closed architecture, the IIc portable is excluded from this megamemory increase.

More than 100 software developers have been working with the new disk drive and memory expansion system since the beginning of this year. By the end of '85, about forty of them will be releasing new or enhanced software that supports either one or both of these products. Also in the pipeline is a new version of *AppleWorks*, designed to take advantage of the memory expansion unit. Taking advantage of the color capabilities of all Apple II's are the new ImageWriter II color printer and the Apple ColorMonitor. The new printer provides high-quality color text and graphics printing at twice the speed of the earlier model. An optional single-sheet paper feeder is available. The new Apple ColorMonitor automatically adjusts to display either 80-column text or color graphics. The color resolution (up to 560 by 192 pixels) is comparable to Apple's monochrome-only monitors.



Fully configured Apple ImageWriter II is twice as fast as the earlier ImageWriter

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ICL TRADERPOINT

Business booms at home

Far cheaper than a city office and allowing flexible hours

By Julie Power

Two Sydney public relations consultants are successfully running their business by telecommuting where others have failed. Former journalists, Shelley Neller and Sherry Stumm, formed the Write-On Group in April.

With the help of two silent telephone lines, three Epson computers and modems they have cut office overheads to a minimum and are able to cover a broad slice of the metropolitan area.

Neller works from her home in Rose Bay, Stumm works in Fairlight and both communicate with their secretary at Fairfield. After working in busy newsrooms, both felt that they worked better in the privacy of their homes yet needed feedback from another person.

Before taking on clients, Stumm and Neller shopped around for computers. Stumm says, "It was not viable not to have computers. It would have been impossible to use a typewriter because of the amount of time spent correcting and presenting and we really needed that time."

The group bought three Epson QX2 computers after negotiating with Andy Brennan at AB Office Electronics. They use *Wordstar* and the QX2's own software has the capacity to print out with different type faces.

It was Brennan who suggested that they link their home offices with modems. It was a new idea to them but one that they "knew in principle would work".

They were both familiar with computers. Neller says "We weren't exactly Luddites. We worked at News Ltd on state of the art computers. Within a week of buying the computers we were functioning", says Neller, who taught Stumm after a few lessons from the dealer.

Information is sent on a modem between the offices several times a day;



Sherry Stumm (left) and Shelley Neller: Not exactly Luddites

a five kilobyte transmission takes less than a minute. Two silent lines were installed between the three offices after attempts on their business lines were riddled with interference.

Every piece of writing is checked by the other partner, a process, says Stumm, that would be "hideously expensive and time wasting using couriers". If the partners want to discuss copy, they bring it up on the screen and discuss additions or deletions by phone.

Apart from being far cheaper than a city office and a tax deduction in the bargain, Neller and Stumm work flexible hours. Stumm has children and although they don't need constant attention, she likes to be close.

The partners often work late into the night long after offices have closed. Because they spend most of the day visiting and lunching with clients, they do not find working from home a handicap. One of the advantages of

having offices on opposite sides of the harbour, is that they are near to their clients: film companies on the north side and advertising agencies in the city and east.

Stumm says that their clients are usually quite fascinated by the way they run their business and a curious few have visited their homes to see how it works.

Both partners are pleased with the way the business has grown and believe that telecommuting has helped. "Business would have been much slower in a traditional office environment," says Neller, "We would have been compelled to write in office hours. I don't know how we would have fitted everything in given that we like to spend a lot of time with clients".

They attribute their success with telecommuting to good planning and communication between the partners and the computers. ■

INTRO

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Conditions of Entry. 1. Prize is not transferable or redeemable for cash. 2. Competition cannot be entered by staff members of Apple Computer Australia Pty Ltd., John Fairfax & Sons Limited or their associated companies or advertising agencies. 3. Only persons taking out a twelve month subscription to Today's Computers are eligible to enter the draw. 4. Judge's decision is final and no correspondence will be entered into. 5. Closing date is November 29, 1985 in Melbourne. 6. Residents of South Australia are not eligible to enter. 7. The winner will be advised by mail, announced in the February issue of Today's Computers and in the public notice of The Australian on December 4. 8. The Racing and Gaming Commission Permit No. 85/888 issued in February. Permit No. TP85/496 issued by the Department of Territories and Local Government.



Jim Thomas of Cover
"I think it's a tool for the



CORPORATE

Mahogany row — void of PCs

**Just how important
is the PC as an
executive tool?
Is it indispensable
to senior management?**

By Pamela Williams

A staggering 87 per cent of the chief executives of Australia's top 60 companies are not using personal computers to keep tabs on their operations. That is the surprise result of a *Today's Computers* survey which includes the managing directors and corporate treasurers involved in recent take-overs.

The PC has saturated the corporate market for more than four years now. The computer industry has been telling us it's the executive tool of the eighties and that any manager worth his expense account needs to be seen to be computerised.

But is this the case? Is the PC worthy of its reputation as the right hand man of today's executive? Is senior management really behind the eight ball if it does not have a computer on its desk and more importantly, how many of Australia's chief executives are actually using personal computers?

At *Today's Computers* we wondered just how important the PC was as an executive tool and whether it had become indispensable to management. We took the *Business Review Weekly* list of Australia's top sales performers — the companies making anywhere from \$600 million to \$5000 million or more in sales per annum — and asked the managing directors and the financial directors one simple question. Do you use a PC of any kind?

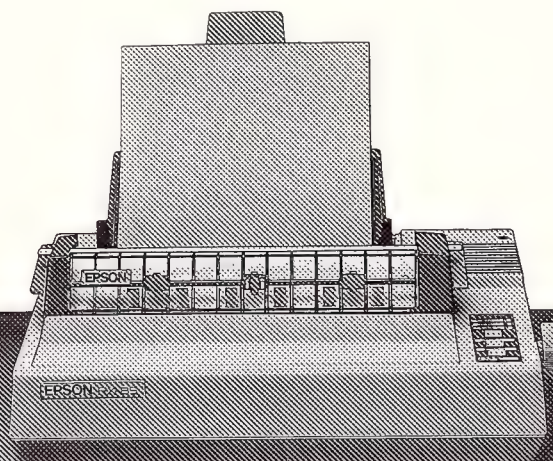
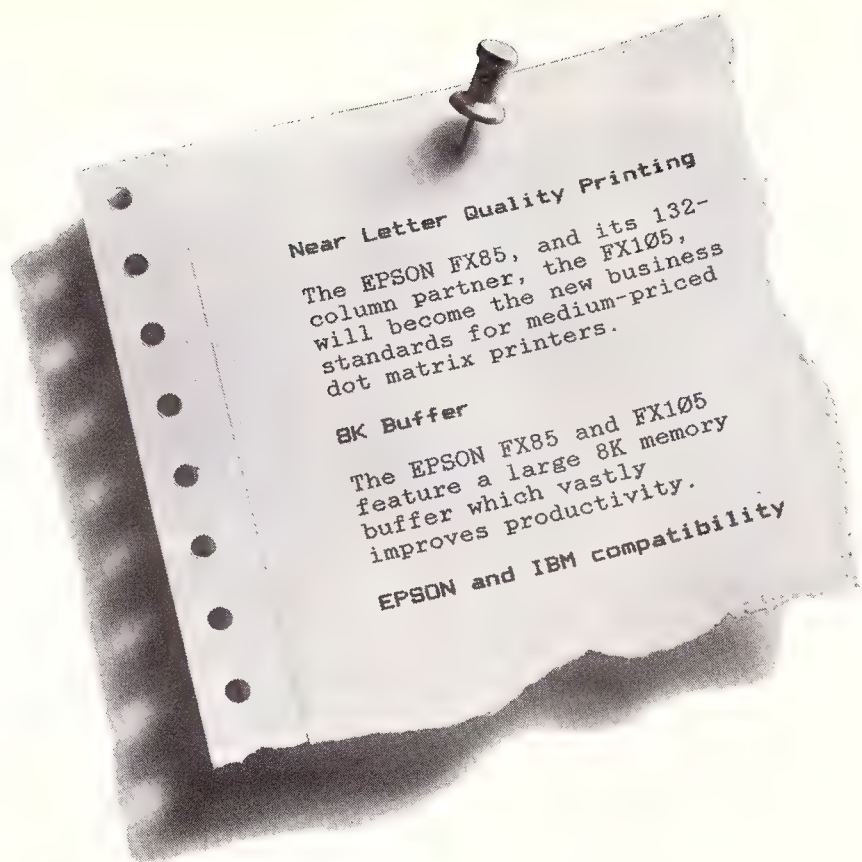
The basic answer was no.

Of the 61 chief executives surveyed, only 13 per cent use some form of technology. In the financial director's corner we found a marginally more impressive 22 per cent. Surprised? We were, and we decided to look at the reasons for this technological void in place of the

CORPORATE

The Chief Executives — those who use PCs and those who do not.

Rank	Company	Name	Position	Yes or No	Rank	Company	Name	Position	Yes or No
1	Coles Myer	Brian Quinn	MD	No	31	James Hardie	David MacFarlane	Group MD	Yes
		Jim Thomas	Dir-Admin	No			David Say	Dir-Finance	Yes
2	Elders IXL	John Elliott	Chief Exec	No	32	Alcoa Aust	John Diederich	MD	No
		Ken Jarrett	MD-Finance	No			Phillip Spry-Bailey	Dir-Finance	No
3	BHP	Brian Loton	MD	No	33	Comalco	Mark Raynor	MD	No
		Geoff Heeley	Exec GM-Finance	No			Hugh Norton	Vice-Pres Fin	No
4	Telecom	Mel Ward	Chief GM	Yes	34	ANI	Neil Jones	Chief Exec	No
		Ray Liggett	Dir-Finance	Yes			John Maher	Dir-Finance	No
5	Woolworths	Tony Harding	MD	No	35	APM	Stan Wallis	MD	No
		Doug Dawson	GM-Finance	Yes			Michael Bertram	GM-Finance	No
6	C'wealth Bank	Vern Christie	MD	No	36	Ansett Trans	Peter Abeles	Joint MD	No
		Fred Hulme	GM-Group Treas	No			Rupert Murdoch	Joint MD	No
							Alan Notley	Dir-Finance	No
7	CRA	John Ralph	MD	No	37	Repco	Ian Cameron	MD	No
		John Carden	Dir-Finance	No			Doug Lawrence	Fin-Manager	No
8	Shell Aust	Kevan Gosper	MD	No	38	John Lysaght	John Lysaght	MD	No
		Steven Hodge	Dir-Finance	Yes			Michael Gillian	Dir-Finance	No
9	Esso Explor	James Kirk	MD	No	39	MIM	Sir Bruce Watson	Chief Exec	No
		John Mumford	GM-Finance	No			Ray Ebbage	GM-Finance	No
10	Kemper	Keith Flatman	MD	No	40	Aust Safeway	Bill Pratt	MD	No
		Bill Stretton	Comp Sec	Yes			Geoff Lord	Fin Controller	No
11	Pioneer Conc	Sir Tristan Antico	MD	No	41	Utah Devel	Gavin McDonald	Pres and GM	No
		David Leach	GM-Finance	No			John Wruck	Treasurer	No
12	BP	Alex Gorrie	MD	No	42	Sydney CC	Fred Rainbird	GM	No
		Jim Taylor	GM-Finance	No			Alf Smith	Treasurer	No
13	Caltex	John McPhail	Chief Exec	Yes	43	Mayne Nick	Ian Webber	MD	No
		Don Bucknall	Dir-Fiscal	No			Lindsay Bythreway	Exec Dir-Fin	No
14	ACI	David Brydon	MD	No	44	Wormald	John Utz	Chairman	No
		Ian Perkins	Dir-Finance	Yes			Graham Sturt	Dir-Finance	No
15	Digital	Keith Parris	MD	Yes	45	David Jones	Brian Walsh	MD	Yes
		Clinton de Silva	Manager-Fac	No			Don Middleton	Fin Control	No
16	Mitsub Aust	Graham Spurling	MD	No	46	Westral Farm	Trevor Eastwood	Chief Exec	No
		Mike Quinn	Dir-Finance	No			Michael Chaney	GM-Finance	No
17	News Ltd	Rupert Murdoch	Chief Exec	No	47	State Bank Vic	Bill Moyle	GM	No
		David Fayle	Dir-Finance	No			John Rawlings	Treasurer	No
18	CSR	Bryan Kelman	GM	No	48	Thiess Toyota	Robert Johnston	MD	No
		Eugene Herbert	Asst GM-Finance	No			William McElroy	Dir-Finance	No
19	TNT	Sir Peter Abeles	MD	No	49	Tubemakers	Jim Griggs	MD	No
		David Mortimer	Dir-Finance	No			Ian Matthews	Fin-Controller	Yes
20	Ford Aust	Bill Dix	MD	No	50	Rothmans	Stan Costigan	MD	No
		Mike Lynch	Dir-Finance	No			Mark Casemore	Dir-Finance	Yes
21	Dalgety Farm	Adrian Boehme	MD	No	51	Franklins	Graham Bowler	GM	No
		Geoff Sheedy	Manager-Finance	No			David Paull	Dir-Finance	No
22	Amatil	David Wills	MD	No	52	Nissho Iwai	Noriya Komatsu	MD	No
		Bill Gibson	Dir-Finance	No			Pete Hayashida	Fin-Sec	No
23	Dunlop Olym	John Gough	MD	No	53	Humes	Ray Hicks	MD	Yes
		Ian Clarke	Dir-Finance	No			Peter Chester	GM Corp-Fin	Yes
24	ICI	Chris Hampson	MD	No	54	Mitsubishi	Kenji Kamaizumi	MD	No
		Geoff Maddar	Treasurer	No			Masao Kikuchi	Dir-Finance	No
25	Bond	Alan Bond	Chairman	No	55	Allied Mills	Robert Cadwallader	MD	No
		Geoff Liddicoat	Treasurer	No			John Hunter	Dir-Finance	No
26	SEC Vic	Jim Smith	Chief GM	No	56	IBM	Brian Finn	MD	Yes
		John Nolan	Dir-Finance	No			Derek Docherty	Dir-Finance	Yes
27	Ampol	Ted Harris	MD	No	57	Metal Manu	Fred Heinrichs	MD	No
		Malcolm Welsman	GM-Finance	No			John Allen	Exec Dir-Fin	Yes
28	Boral	Sir Eric Neal	MD	No	58	TAA	Frank Ball	MD	No
		John Leeman	GM-Finance	No			Ken Harrison	Treasurer	Yes
29	GMH	Chuck Chapman	MD	No	59	Peko	Charles Copeman	Chief Exec	No
		Woody Leathley	Exec Dir-Fin	No			Graham Reaney	Dir-Finance	No
30	Burns Philp	Andrew Turnbull	MD	Yes	60	Jennings	Jim Wood	MD	No
		Bob Heiler	Dir-Finance	Yes			John Trainor	Treasurer	No



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CORPORATE

mass of technology we expected to find.

Our interviews with executives from the corporate front-line posed the theory that the PC is not the tool for senior management. While middle management in all the companies we surveyed are using PCs as a crucial and indispensable part of their work, the role of senior management in making and implementing critical strategic decisions does not require direct computing power.

The chief decision-makers find it quicker to lift the phone and ask for any information they want, rather than spend time becoming 'computer literate'. Significantly, there is greater use of technology among the younger executives, giving rise to the possibility that as they ascend to the seats of power, they will take their PCs with them.

Pete Hayashida — Nissho Iwai

The management of the Japanese trading company, Nissho Iwai, does not use personal computers yet, but not because of any long-term resistance to technology. In fact, the company will probably encourage its top executives to use them within the next year.

According to finance director, Mr Peter Hayashida, the reason Nissho Iwai is not currently using the PC as a management tool is "basically, lack of knowledge of the personal computer".

However, he says that "if we think about the future, it is very necessary".

Hayashida says that a PC could simplify his role in running the company by making information such as payroll, stock control and mailing lists easily available to him.

It is unlikely that the managing director of Nissho Iwai, Noriya Komatsu, will need to use a PC, says Hayashida. Like most people in his position, Komatsu's documents are prepared for him and any information he needs is available from managers.

Nissho Iwai is 100 per cent Japanese owned, and Hayashida says that it will be an advantage to the company to have personal computer contact between the Australian operation and the 100 or more computer professionals in the parent company.

— Philippa Tyndale



Bill Dix — Ford

Ford's Managing Director, Bill Dix, does not believe he needs a personal computer. He has given a substantial amount of thought to the question and decided he cannot justify it.

"I don't believe I have a sensible utilisation for a computer. It's not a matter of learning to use it or worrying about keyboards. It's simply a matter of whether I get the information I need from it. The key question must be 'is it useful'," says Dix.

"If I had one which provided a status report of the aspects of the business I want to look at every day, I would use one. But such an animal doesn't exist and therefore I continue to get the key reports in hard copy."

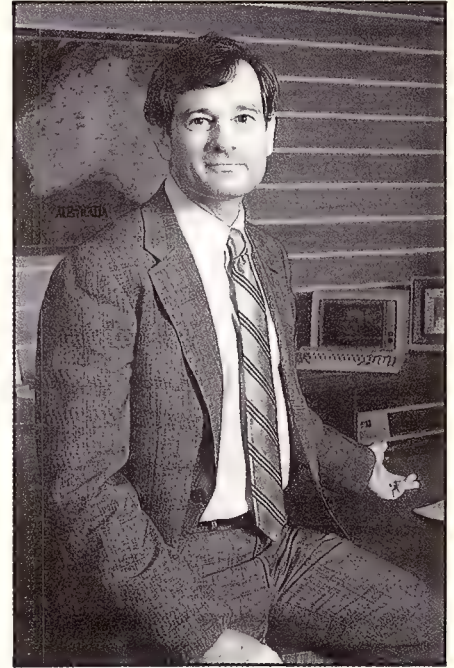
Dix says the nature of the business you are in is important. "I don't think a general manager in a manufacturing business needs it. On the other hand, other areas do. Our general manager in parts and accessories has one and uses it heavily, but our general manufacturing manager doesn't need one."

Dix argues that the situation is unlikely to change even in the event that someone presently in the middle management area using a PC in their work were to rise through the ranks to the chief executive's position.

"I'd be astounded if someone moving into my area needed to bring a PC with them," he says.

There is also another concern. "If you had a lot of information on a computer and the general manager was accessing it to check whether people had done their work, I think you'd have a problem. It would be very undesirable and could be most disruptive to the running of the organisation," says Dix.

— Pamela Williams



John McPhail — Caltex

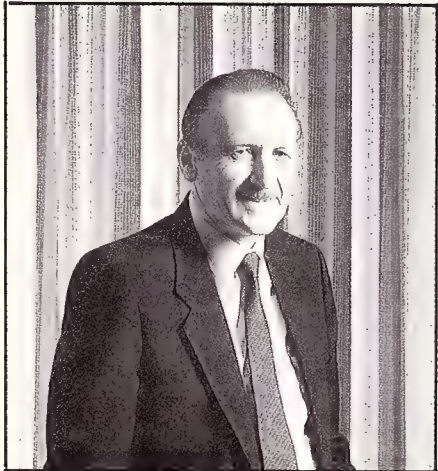
John McPhail, managing director and CEO of Caltex Oil Australia Pty Ltd is the only one of the company's five directors to use a personal computer. He believes personal computers increase the productivity of executives and he has two IBM XTs, one in the office and one at home.

The decision to use PCs was made 18 months ago when he was marketing manager. He says his primary motivation was that he wanted to work outside office hours. As a decision maker he wanted to understand how technology could be used, and abused.

McPhail's PC is set up with an Irma board so it can be used as an IBM terminal for the mainframe or as a stand alone PC. Information is downloaded from the mainframe so he can extend his day; he uses the office PC early in the morning or late at night when his secretary is not available and continues his work at home on weekends. He uses Lotus 1-2-3 to look at information graphically which, he says, makes it easier to perceive trends.

McPhail says communication is going to be a more prominent feature in the organisation and he believes that as Caltex expands its communications facilities, senior management will find personal computers more attractive.

— Julie Power



**Jim Thomas —
Coles/Myer**

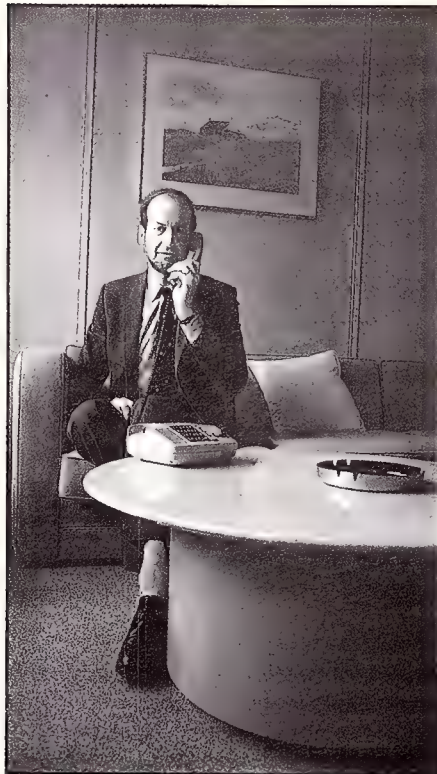
Jim Thomas, the administrative director at the new super-retailer Coles/Myer, does not use a personal computer and has a theory that the PC will not be seen as the tool of the chief executive for another five or 10 years — the time it will take for middle managers growing up with the PC to move into senior management positions.

"I think it's the tool for the future. I think that senior management doesn't have time to learn to use a PC. They are not at all simple to use. It's not like picking up a typewriter and learning to use it over a day or two. On the other hand, the young executives have come up through the ranks with computers where they have had time to learn," Thomas says.

Notwithstanding, the four top executives in Coles all have Commodore 64s at home which they use to familiarise themselves with technology. Management on the next rung down use IBM PCs and the company has a strategy called Focus which provides an opportunity for employees from any department to learn how to access information from the mainframe and learn to manipulate the data.

Time is of the essence for senior management according to Thomas. "Executives can't afford to spend the time learning to use PCs when they can just come in and ask someone for the information they need. I have no doubt that in the big organisations the top two or three spend more time discussing and talking to people. They may not even lift a pen in three days."

— Pamela Williams



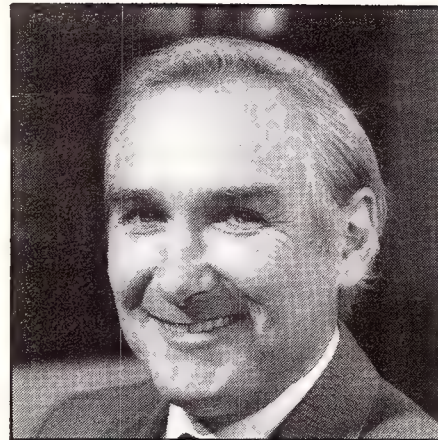
Mel Ward — Telecom

Telecom's chief general manager, Mel Ward, believes that age is one of the key criteria governing the use of personal computers by senior management. He says it is significant that Telecom's managing director, Bill Pollock, is in his 60s and does not use a PC, whereas Ward himself is in his mid-40s and does.

"The younger managers have grown up with terminals and are more comfortable with them. I also believe that the early generation of PCs just don't do the things that chief executives need. The technology is not yet friendly enough. A chief executive cannot be sitting down with a spreadsheet doing analysis and rolling through screens looking for crucial facts and movements."

Ward uses an IBM-compatible PC for electronic mail, sales performance figures, physical targets, demand statistics and telephone call revenue. He also uses an NEC PC at home which, he says, is 50 per cent work related. For the future he would like to be able to pick up trading statements on a continual basis, but says this sort of performance requires a lot of special applications, rather than the packages presently available on the market.

— Pamela Williams



**David Macfarlane —
James Hardie
Industries Ltd.**

David Macfarlane, the managing director of James Hardie, decided that the introduction of personal computers was so important that everyone from senior management down would have to get involved.

James Hardie started buying Apple Macintoshes on a trial basis for its executives and group managers late last year. Now the company has more than 80 machines in the offices of senior managers and line managers throughout the 40-company group.

"I thought that the business would lose overall if executives did not quickly come to terms with the new power available to them through proper use of personal computers. It was clear that personal computer application in business was the growth area for faster business decision making. Hardie simply couldn't afford to be left behind," Macfarlane says.

He uses his Mac to access AAP financial services. His Mac comes with *MacWrite*, *MacPaint* and *Multiplan*. James Hardie's data processing department maintains a library of software, provides a "hotline" support system and publishes a users newsletter.

With the advent of the Mac the company has developed a new group planning and forecasting system for divisional managers. The head office planning department prepares short and long term projections which can be measured against the five year plans which are drawn up for each of the 40 companies in the group.

— John Kavanagh

CORPORATE



Ray Hicks — Humes

When Humes's managing director, Ray Hicks decided to raise the level of computer awareness among his senior management, the firm's corporate data processing manager chose the Telecom Computerphone in preference to a PC because of the combined facilities provided.

Hicks has set the pace and today all general managers in the company are using the Computerphone. Hicks says the ability to connect to Viatel and other external databases by simply keying in a short code is providing keyboard skills and familiarity.

"Progress is also being made in the use of spreadsheets, graphics and database software although it varies from manager to manager," says Hicks. He adds that the quality of software makes it useful in many areas, including long-term planning, company acquisitions, currency comparisons, cash flow and profit and loss analysis.

He cites the electronic messaging ability of the Computerphone as improving the communication lines between management and says that future progress will include connecting the Computerphones to the corporate mainframe for direct access to the company database.

— Pamela Williams

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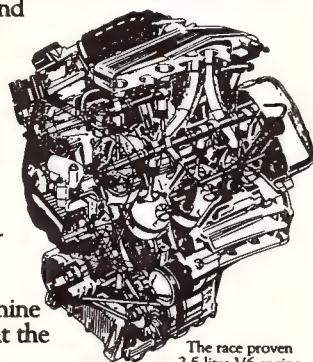
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The Alfa 90 is not only a powerfully agile machine but one in which you feel confident, no matter what the driving situation.



The race proven 2.5 litre V6 engine.

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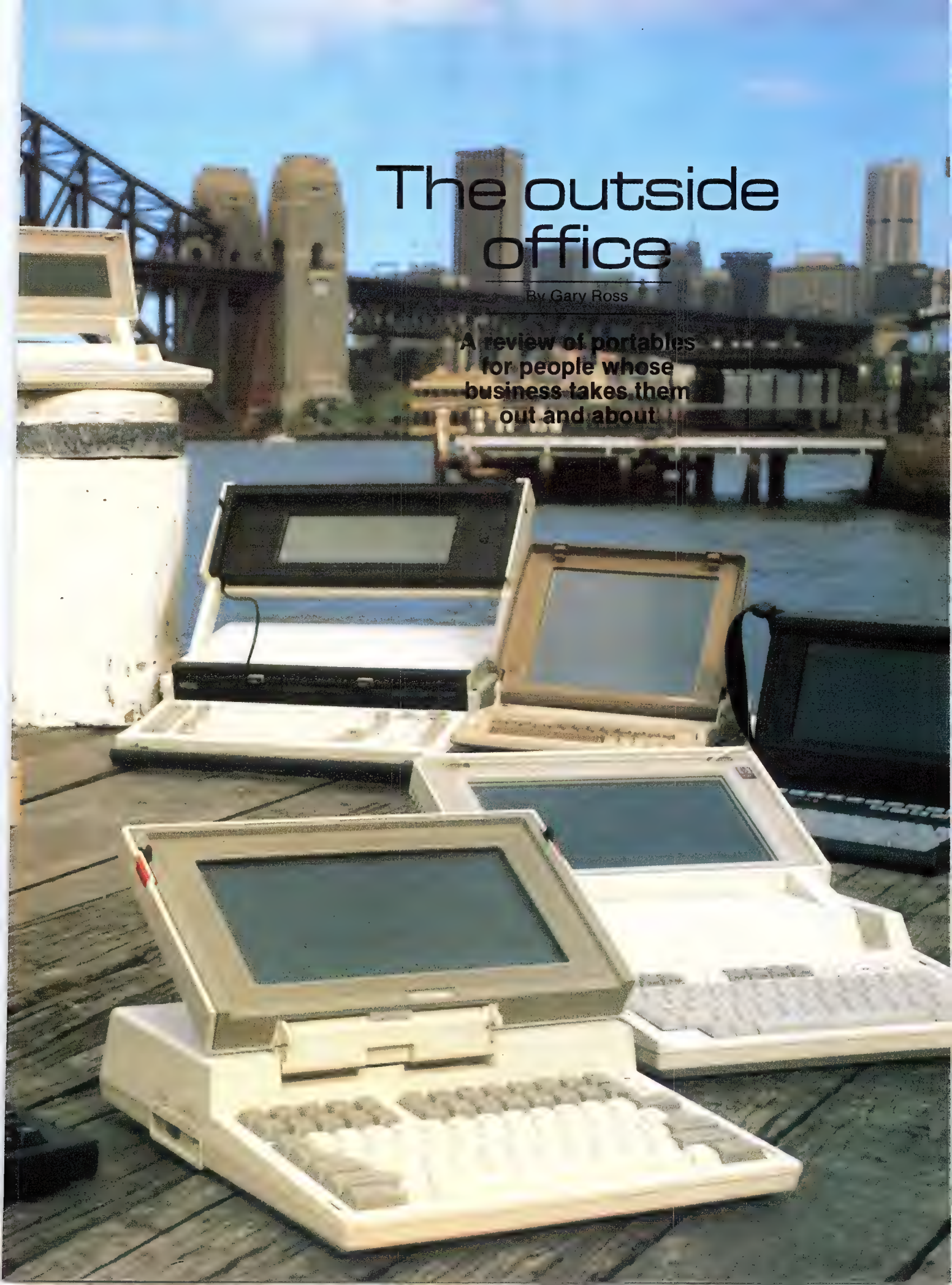




The outside office

By Gary Ross

A review of portables
for people whose
business takes them
out and about



PORTABLES

For the businessman who spends as much time working outside the office as in it, the portable computer can be a boon.

All facts and figures will be at his fingertips and he can work in a plane, in a car or in a hotel room.

The big question is what sort of machine should he buy but before we answer that we will explain the difference between a portable and a transportable.

Our definition of a portable, no matter what its size, is a machine that uses internal batteries. Transportables, no matter how small and light, require a power point; thus the IBM Portable is really a transportable while Hewlett-Packard's HP 110 Portable is a portable.

In the past, manufacturers wishing to make a transportable, took their standard desk-top computer and essentially repackaged it. The resulting computer usually came in at around 11 kilograms — some went up to 14 kilograms — and were just too big and heavy for the average female to lug around. Even the men usually preferred not to.

However this year a number of machines have been introduced, which, though still requiring a power point, have been designed from the outset for small size and light weight.

All these machines are comparable to their desk-bound cousins in everything but size. Though none has conventional IBM expansion slots on board, all supply most of the wanted features, such as parallel and serial ports. In addition, many come with color graphics built-in, requiring only the connection of a red/green/blue monitor to bring the machine up to full PC standard. If you still need room for a couple of add-on boards, say a 3270 card for talking to IBM mainframes, you'll have to get an expansion chassis, and the chances are you'll be able to leave that in the office when you take your PC on the road.

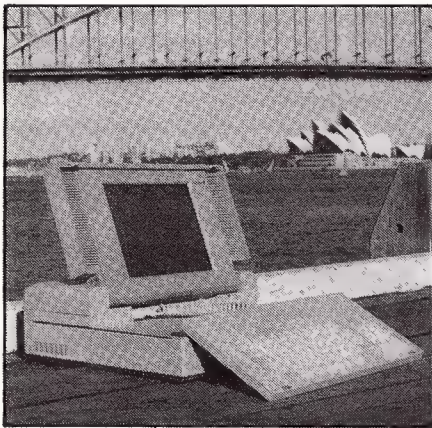
Ericsson Portable

The Ericsson portable does not qualify as a true portable — no batteries — but it is a very nice machine in its own right. Though not as small as any of the true lap-top portables, it still comes in at a reasonable 7.6 kilograms. Compared to conventional transportables such as the Compaq or the IBM Portable, it is quite small, much of this size

reduction being due to its flat, gas plasma screen.

The screen is excellent and won praise from most who saw it, being flat enough to make it highly suitable for a portable computer yet with a high resolution and enough contrast to make it easy to work with. It was also free from reflections.

Its reddish color was received with mixed feelings and in addition, the lines of print were a bit close together, so that the tail of a "y" would merge with the top of a "t" on the next line.



The keyboard, which is removable, is of standard IBM PC layout except for the addition of a second ENTER key on the number pad and the repositioning of the ten programmable keys above the "qwerty" keys. There are no lights to warn users that they have engaged CAPS LOCK or NUM LOCK.

The machine has one disk drive, though a second, external unit will be available. Ericsson expects it will cost around \$750. But a better bet, we feel, is the optional permanent RAM disk. Selling for the same price as a regular floppy, this is a 512K bank of memory which is quite independent of the computer's main memory and which the computer thinks is a second disk drive.

You copy data or programs into this RAM disk (which Ericsson calls an Ergo-disk), and then use it as a regular disk drive. Software runs faster and all the disadvantages of a one-disk machine disappear. It also means you do not have to carry a second floppy.

A compact thermal printer is also available and this actually fits inside the Ericsson's case. The print quality is only fair with regular paper, but gets better if you print everything in bold. It is slow though.

The Ericsson has a built-in real time clock which dies as soon as you disconnect the power cord.

IBM compatibility is good but not perfect, possibly because of the screen. The Ericsson failed to show the border on SC3 properly, but at least it did not make the entire border blink — it just failed to show the highlights.

In addition the cursor refused to work properly when in the screen design section of *Open Access*'s graphics design module.

On the other hand, it drew perfect 1-2-3 graphs, worked fine with *GEM* and *Framework*, ran Flight Simulator without a hitch and had no problems with the Digger arcade game. It even ran Concurrent PC DOS which indicates a very high level of compatibility. Performance on bench tests was as expected given the specifications.

At an expected sale price of \$4800 for a base machine, it is not cheap, though as a rule of thumb, portables always cost more than their desk-bound cousins. Even if you are not planning on buying a transportable, have a look at the Ericsson. We think this is one of the machines that will shape the next generation of PCs — especially portables.

For: very compact (for a transportable), not too heavy, innovative screen, very IBM compatible.

Against: Size (compared to lap portables), No battery.

Sum up: Watch out Compaq!

Visual Commuter

The Visual Commuter is one of the new breed of transportables in which all the features of a conventional PC are wrapped up in a box that is itself smaller than the processor box of an IBM PC.

Most of this size reduction comes from replacing the usual cathode ray tube with a 25 line by 80 column liquid crystal display. The designers also made the box very slim so that it stows easily out of the way. It would probably fit under a plane seat were there a carry bag, but the manual recommends that it be packed in its crate for long distance transportation.

It has two standard IBM-format floppies, 5¼ inch jobs that hum like a fridge when working but which happily accept standard PC floppies. The machine, which has a fan, would have been fairly quiet except that the "A" drive on the test machine rattled in

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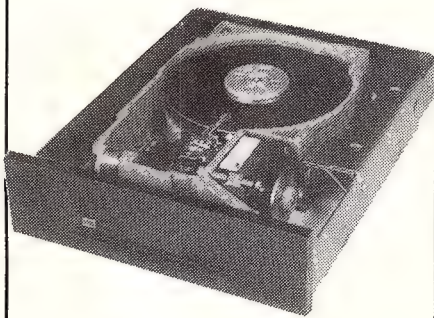
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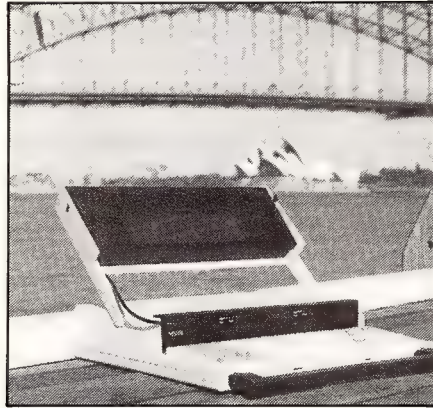
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PORTABLES

sympathy with the fan.

The keyboard is a bit spongy, but follows the standard IBM PC layout. There are even little LED lights on the NUM and CAPS LOCK keys to keep you aware of their status. The commuter's carry handle is fixed and comes out from the keyboard where it is either



a wristpad or an annoyance, depending on how you type.

The LCD screen is good, not great. It swings up from above the keyboard like a lap portable but suffers the disadvantage that you do not have any choice about the angle at which it sits. There is also a cable which threads its way from the bottom of the screen to a Bell plug behind the keyboard. This arrangement looks messy, but you can remove the screen and lid entirely and then you have a flat surface on which to place a conventional monitor.

A panel at the back pops open to reveal several sockets; an IBM style port that connects to an expansion chassis; two RS232C ports — one of them programmable, a nine-pin RGB plug and a five-pin DIN connector for hooking up an RF modulator which doubles as a Composite Video Output.

The machine proved to be highly compatible, being one of the few to run Concurrent PC DOS which demands a fairly standard ROM. But it did not handle certain colors at all well. Blue was particularly bad, producing a striped effect that made any screen text in the affected area quite unreadable.

For: IBM compatibility, IBM keyboard, small size (for a transportable), price.

Against: Weight, screen problems.

Sum up: Good, budget-priced transportable.

True Portables

Though Australia's Dulmont Magnum

was probably the first MS DOS lap portable, it was Hewlett-Packard of the US which started the rush of lap portables. Its deserved success in winning the 1984 computer of the year award helped legitimise the lap portable and since then the class has gone from strength to strength.

Manufacturers who have now entered this field include Sharp, whose PC 5000 was one of the first in the field, Kaypro, Osborne, Texas Instruments, main-frame manufacturer Data General and Toshiba. Even IBM is getting into the act and we will not be surprised if IBM launches the machine world-wide before the end of the year.

Unfortunately most of the lap portables surveyed here have problems. To begin with the ubiquitous liquid crystal display, while considerably improved, still lack contrast and so can be hard to read.

Then there's compatibility. While a few manufacturers, such as Texas Instruments and Hewlett-Packard, have chosen to support their own standard, the combination of trying to tie unusual technology together — LCD screens and 3½ inch floppy disk drives — while at the same time staying true to the IBM ROM BIOS has proven too much for most manufacturers, with the result that we found annoying glitches in nearly all the surveyed computers.

Hewlett-Packard HP-110 and 110 Plus

When it comes to making portable equipment — HP build smaller, lighter and tougher than just about anyone — and they are notorious for over engineering their products.

The HP 110 — officially known as The Portable — is no exception. It is easily the smallest and lightest MS-DOS portable on the market today. Not only that, its external accessories — a floppy disk and a portable version of the Thinkjet inkjet printer — are also the smallest and lightest of their kind we have yet seen.

The reason there are two 110s in our photos is because HP will shortly be releasing The Portable Plus, the latest version of this diminutive computer. We got them both because HP plans to sell the two models side by side, at least for the time being. They are very similar in appearance and size, the major visible differences being the 25-line screen on

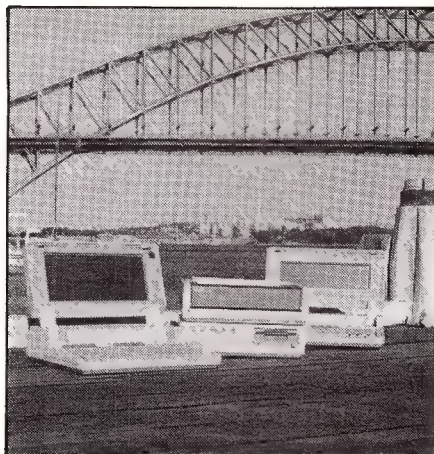
PORTABLES

the new version and the fact that the new model is fractionally taller than its predecessor.

The big changes are under the skin. Where the original 110 had a raft of software in its 740K ROM — *Lotus 1-2-3*, *Memomaker*, *Terminal*, *Communications* and so on, the 110 Plus dispenses with most of this. Instead two chip drawers live on the underside of the machine. They can take extra ram — up to 896K of it, or software already embedded in chips. The review machine came with *1-2-3* and *Microsoft Word* and more software is available. If you would rather have programs than memory, you can carry up to three megabytes worth inside the machine.

Both have built in software for communications, including direct connection with HP 3000 mini-computers, *MemoMaker* which is a notepad that produces *WordStar* format files and an appointments filer with an alarm facility that overrides everything else on the computer when it goes off. The 110 Plus also adds a phone directory and dialler.

The Portable does not come with a disk drive. Instead it stores everything either in ROM or in a RAM disk, a section of memory which the operating system thinks is another floppy disk. This makes the machine both smaller and more rugged than its competitors.



The machine is rated as being capable of withstanding a 100 G shock — that's the equivalent of a 60 centimetre drop onto solid concrete.

So what happens to your files when you switch the computer off? Absolutely nothing. Hitting the OFF key only turns off the screen. A trickle charge keeps memory alive and well so that all your work is preserved. What's more, all memory is made with CMOS chips (Complementary Metal Oxide Circuitry) which require only a small electrical charge to keep working.

You can adjust the partition between computer memory and RAM disk through a built-in configuration program so that with the full 896K of memory on board and 256K of operating space for the processor, you can carry up to 640K of files around and never need a disk drive. That can stay at the office or in your hotel where HP reckon it belongs.

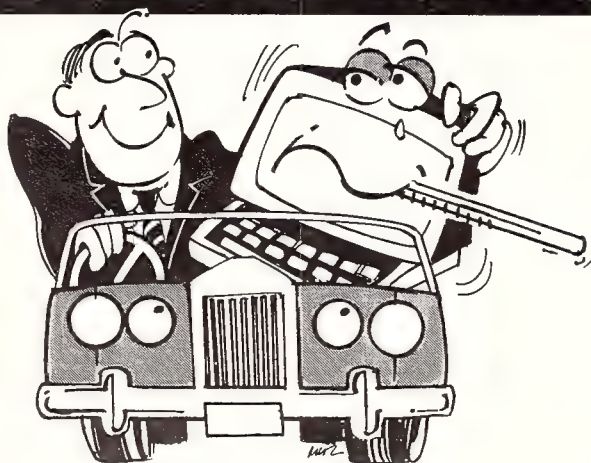
No disk drive also means longer battery life and the 110's lead alkaline batteries are rated good for 20 hours of continuous use. HP says that without any use, files will be preserved for up to six months, and when available power falls below five per cent, the HP tells you so, shuts down and diverts all

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PORTABLES

power to the memory to preserve those files.

The batteries, naturally, are rechargeable. A nice touch is that all HP portable equipment uses a standardised recharger coming in through a standard plug.

To conserve power, the 110 switches "off" if there has been no keyboard input after a pre-set interval, but reactivates as soon as a key is touched and comes back exactly the way you left it.

The keyboard is springy and has a very short travel which some objected too. The layout, though not the same as IBM's, is good and The 110 Plus adds a number pad embedded among the "qwerty" keys.

The screen on The Portable Plus shows the advances that have been made in liquid crystal display technology since the 110 first appeared. Though the screen on the 110 Plus has grown from 16 to 25 lines, it has a noticeably better contrast than the earlier model and is easier to read — on a par with the Toshiba.

Communication with the outside world is via a 9-pin RS232 port or HP's IL Loop interface, an interface specifically designed for use with portable equipment.

Cables are simple two-ply electrical leads with a male plug at one end and a female at the other, making it impossible to wire things up wrongly. What's more, the loop design allows up to 30 devices to be connected up at once, and in any order. HP-IL Loop peripherals include the portable disk drive and Thinkjet printer shown in the photo, a plotter, IL to RS-232 and GP-IB interfaces and a variety of test and measuring instruments.

Unfortunately there is a problem. The HP is not an IBM compatible system. HP says it has changed the DOS interrupts to bring them into line with IBM so software that does not write directly to the screen will theoretically run. We did not have the opportunity to test this.

Even if it's true, you'll still have to buy HP software to carry out most of your work. Given the niggling compatibility problems we experienced with most of the other machines surveyed, that might be a blessing in disguise. For while HP's software library may not be as big as IBM's, at least you can be confident that the software will work.

The 110 range is a very clear statement of what Hewlett-Packard believes a portable computer should be, with the emphasis on long battery life, ruggedness, small size and light weight.

For: Small size, low weight, ruggedness.

Against: IBM incompatible.

Sum up: If only it were a compatible...

Morrow Pivot 2

The Morrow Pivot is one of the more genuinely innovative designs among the machines reviewed.

To begin with, it manages to fit two standard IBM format 5¼ inch floppy disks into an unusually small package. It is still roughly twice as thick as the other lap portables but loses nothing in the other dimensions.

Next it adds a host of built-in software, including an appointments manager, phone directory with built-in dialler and a world clock that displays all the world's time zones and will tell you the time in New York or Istanbul at the touch of an icon button. It also has a built-in communications program and a built-in modem is available as an optional extra.

Unusual too is the machine's layout. Unlike the other portables in this survey the keyboard drops down to reveal the screen, and it is this feature which really sets the Morrow apart. It works this way: at turn-on, a thin, neon-filled envelope is hit with a strong charge to get the gas glowing — just like a conventional neon tube. Once glowing, a trickle charge is all that is needed to keep it lit.

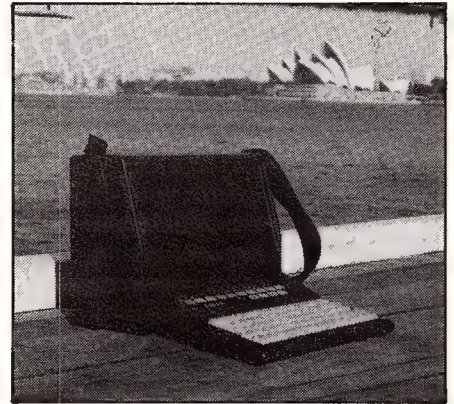
The system works well. Because, unlike a conventional LCD which must rely on reflected light for its picture, the Morrow screen emits its own light. This gives a highly readable display with good contrast. It still flickers like an LCD when viewed from the side, but otherwise rivals a conventional CRT screen for contrast and legibility.

We were highly critical of the Morrow when it was first released because of its slow speed and slow and clunky disk drives. Well the disks are still noisy and clunky, and the doors still open towards you so that you have to feed it disks from around the doors.

But the other criticisms have been fixed. The disks now work with the sort of speed we expect, given Morrow's expertise with disk controllers and the processor has been sped up from its

original clock speed of 3.5 MHz to the more common 4.77 MHz used in other IBM compatibles. These changes are reflected in its good benchmark times.

The keyboard feel is not great but it has a good travel. The keyboard layout is considerably changed from the IBM



PC, and can be clumsy, requiring that you press the right-hand shift key to access some functions, and the left-hand shift key to get others.

The Morrow also has a few compatibility problems. Attempting to use the graphics design section of *Open Access* locked up the keyboard and it failed to properly display the border in *SuperCalc III version 2*. However it ran everything else including Flight Simulator, though it had some problems handling the sound effects.

The manual is excellent, well written and with a rare wit and honesty. Other PC manufacturers should buy a Pivot just to see how good a manual can be.

In balance, the Morrow Pivot is an excellent little machine. Though bigger than conventional lap portable, it loses nothing in weight while adding the convenience of IBM PC format disk drives to its exceptional screen. We think the Morrow is a computer that deserves to sell well.

For: Great screen, built-in software and dialler, uses conventional floppies.

Against: Keyboard layout, big (for a lap portable), minor incompatibilities.

Sum up: Genuinely innovative. Worth auditioning, especially if you need a portable and will not accept conventional LCD screens.

Toshiba T1100

The recently released Toshiba T1100 is unique in this group. It is the only MS-DOS portable that sells at the same price as an equivalent PC and that's no

From Software Corporation of Australia.

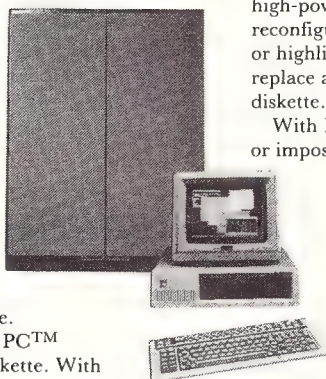
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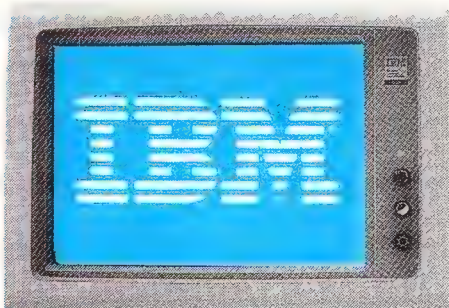


high-powered, menu-driven software. You can reconfigure the keyboard and change screen colours or highlighting at will. For upgrades, you don't replace any PROMs. Just plunk in a different diskette.

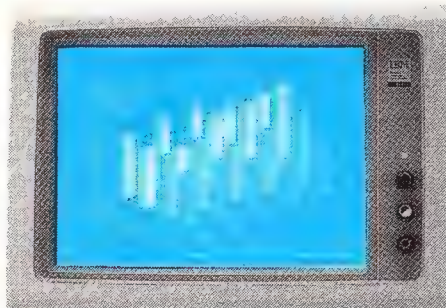
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PORTABLES

Name	Price	Warranty (mths)	Length (cms)	Width (cms)	Height (cms)	Weight (kilos)	No of keys	Battery	Life (hrs)	CPU	Speed (Mz)	Mem
Apricot Portable	\$5214	3	45.0	17.2	20.0	5.9	92	N	N/A	8086	5.00	256/640
Data General DG-1	\$4800	3	34.8	29.7	6.8	4.0	79	Y	8-10	80C88	4.77	256/512
Ericsson Portable (1)	\$4600	3	31.0	39.0	11.5	7.6	84	N	N/A	8088	4.77	256/512
GRiDCase.	\$5858	3	38.1	29.2	5.7	5.5	57	Y	N/A	80C86	4.77	512
Hewlett-Packard HP 110	\$5341	3	33.0	25.0	7.6	3.3	75	Y	20	80C86	5.33	272
Hewlett-Packard Portable Plus	\$4911	3	33.0	25.0	7.6	3.4	75	Y	20	80C86	5.33	128/896
Morrow Pivot 2	\$5794	3	15.4	33.0	24.3	5.9	77	Y	8-10	80C86	4.70	256/640
Toshiba T1100	\$2990	3	31.7	31.7	7.6	3.8	83	Y	8	80C88	4.77	256/512
Visual Commuter	\$3300	3	39.4	45.7	8.9	9.1	83	N	N/A	8088	4.77	256/512
NEC 8401A Starlet	N/A	3	21	30	5.6	2.2	68	Y	8	280A	3.99	32/64
IBM PC	\$4773	3								8088	4.77	256/640
Canon A-200	\$4275	3								8086	4.77	256/512

IBM PC and Canon A-200 included for performance comparison purposes.

mean feat.

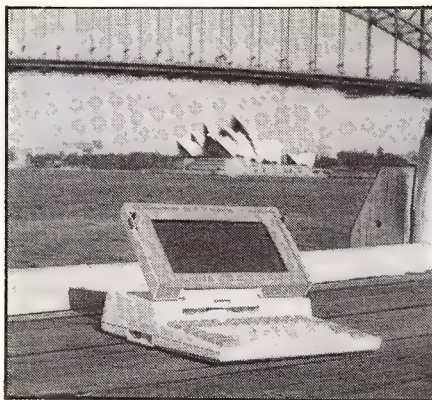
It has the extraordinary base price of \$2990 for 256K and one disk drive. \$650 for a second disk and another \$650 to bring the machine up to 512K plus \$165 for the surprisingly optional RS232 port and you've got a true pocket PC — complete with parallel port and color graphics that go out to an external monitor. At \$4455 for the lot, that's still less than a similarly configured IBM PC.

The machine itself is surprisingly small, smaller than any other machine in the survey bar the HP 110 which gets part of its size advantage by leaving out the floppy. There's a single 3½ inch micro-floppy on the right and an on/off switch and the contrast adjustment on the left.

At the back are (from left to right) the parallel port, a 36-pin plug for a second disc drive — both 5¼ and 3½ inch sizes available — a switch that tells the machine which disk drive to boot from, 9-pin RGB port, composite RGB output, a switch for selecting which screen to use, the LCD or an external monitor — and the battery recharge plug.

Lifting the lid reveals a very cleverly laid-out IBM style keyboard. There are

two extra rows of keys above the "qwerty" keys, and that's where the soft keys and the number pad go. The number pad is sensibly laid out so that the four cursor keys are all grouped together, as are SCROLL LOCK and NUM LOCK.



Unfortunately this good work is spoiled because the numbering of the programmable soft keys runs from right to left. A few of the minor characters too have been repositioned. No longer on the fringes of the "qwerty" keys, they now reside next to the space bar. The keyboard itself feels wooden but it is not objectionable.

The screen too is better than one might expect from the price. A 25 line by 80 column liquid crystal, it actually has a better contrast ratio than the DG-1.

It is also unusual in that it is double hinged so that if you're using a monitor, the screen drops flat and gets out of your way.

Though you can tilt the screen to any angle, the double hinge lets the screen wobble. You'll hate it in the back of a moving car or on a train.

The screen also has a bug. Anything that works with a blue background becomes invisible as the screen goes a milky grey. The problem was partially solved with a MODE BW80 command to turn off the color, but some software grabs for color if it is there, and there is no defence against that. We ran the same software with a color monitor attached to the Toshiba and there were no problems.

Otherwise IBM compatibility seems good. It ran all the commercial software we could feed it without any hiccups. It ran 1-2-3, handled the *Supercalc* border problem without drama and did not trip up on the *Open Access* graphics design module that caught out so many

PORTABLES

Op/system supplied	Expansion	Screen	Resolution	Color	Disks	Hard Disk	Inc s/ware	Save WS file (secs)
MS-DOS 2.11	1 slot	80 x 25 LCD	640 x 200	External monitor	1 x 750K 3½" diskette	10 MB opt, external	Diary, SuperCalc, SuperPlanner, Superwriter, and more	44.70
MS-DOS	1 slot	80 x 25 LCD	640 x 256	No	1 x 750K 3½" floppy, 2nd opt.	Via expansion chassis	MS-DOS 2.11, tutorial, GW-BASIC	30.50
MS-DOS 2.11	2 slots in separate unit	80 x 25 gas plasma	640 x 400	No	1 360K 5¼" floppy, 2nd ext floppy opt.	No	BASIC-A, GW-BASIC	32.30
MS-DOS, GRiD-OS	Via IBM expansion chassis	80 x 25 LCD	640 x 200	External monitor	1 360K 3½" floppy, 2nd ext floppy opt.	Yes, optional	GW-BASIC, PCslave	30.90
MS-DOS 2.11	Nil	16 x 80 LCD	480 x 128	No	RAM disk, ext 710K 3½" floppy opt.	No	PAM, Lotus 1-2-3, MemoMaker, Terminal, all in ROM	N/A
MS-DOS 2.11	Via RAM and ROM trays	25 x 80 LCD	480 x 200	No	RAM disk, ext 710K 3½" floppy opt.	No	PAM, HPLINK, TERMinal, Secure, Pack	N/A
MS/DOS 2.1	5 slot expansion chassis	25 x 80 backlit LCD	640 x 200	Yes, to ext RGB unit	1 x 360K 5¼" floppy, 2nd opt.	No	New Word	32.90
MS-DOS, (CP/M 86 opt)	Memory, extra I/O	25 x 80 LCD	640 x 200	Yes, to ext RGB unit	1 x 3½" 720K floppy, 2nd opt.	No	MS-DOS 2.11	68.30
MS-DOS 2.11	To standard expansion chas.	80 x 16 or 25 LCD	640 x 200	To ext monitor	2 x 5¼" 360K	No	MS-DOS 2.11	33.20
CPM 2.2	1 slot	80 x 16 LCD	480 x 128	No	Opt. ext, 1 or 2 3½" floppy	No	WordStar, Calc, personal file, Telecom VT-100 emulator	N/A
PC-DOS 2.11	5 int expansion slots	Mono or colour	640 x 200	Optional	1 360K 5¼" floppy, 2nd opt.	10Mb opt.	BASIC, BASIC-A	31.2
MS-DOS 2.11	5 int expansion slots	30 cms high res.	640 x 200	Optional	2 x 360K 5¼" floppies	Optional	Operating system, GW-BASIC	31.25

of its brothers.

However, as the benchmarks show, the disk drive is surprisingly slow. Why this should be we cannot guess. It is something Toshiba will have to look at. The disk on the test machine was also noisier than other T1100s we have seen.

Despite minor annoyances and the screen's strange habit of occasionally putting its own faint underlinings on text, the Toshiba works well. At a base price of \$2990 for a machine with a high level of IBM compatibility, the T1100 is far and away the bargain buy among the surveyed computers.

For: Small size, light weight, IBM compatibility, price.

Against: fragile screen hinge, screen allergy to the color blue, keyboard feels wooden.

Sum up: Despite minor problems, still a bargain.

Data General DG-1

Data General is best known as an aggressive manufacturer of high quality mini computers. The portable DG-1 therefore is not only the company's first IBM compatible, but its first portable, and Data General have done an astonishing job of miniaturisation.

The computer is American in design, and has a full size 25 by 80 liquid crystal screen built into the lid. Though screen contrast is on a par with the Toshiba and the HP-110, the full-size screen means the display is compressed. Text is therefore easier to read while graphs and charts assume their correct proportions.

Though roughly one third bigger than the HP 110, the DG-1 is one of the only two portables in the survey that can carry two disk drives and we understand there may be a portable hard disk on the way too. That sounds promising.

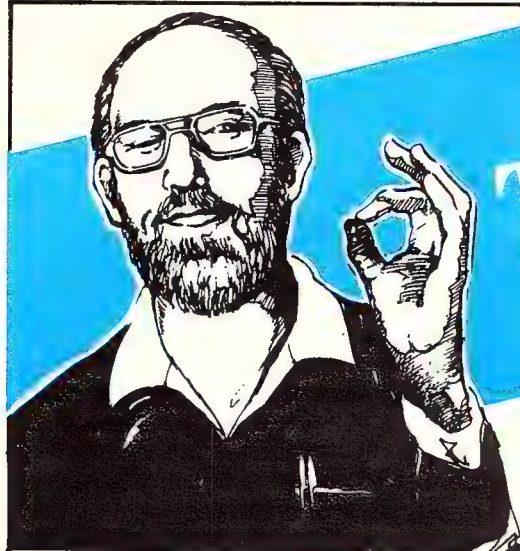
The plugs at the back are protected by a cover which slides down to become a "foot". This cants the whole machine forward and gives the keyboard a slight tilt. The "foot" popped out twice while we had it though and is a candidate for accidental breakage for this reason. So too are the strips of plastic running down the DG-1's sides. Though protected when the machine is closed up, the ends are exposed and can catch and pull away if you move the machine with the "foot" extended.

There are a full complement of ports at the back including a parallel printer port, RS232 port and the expansion

bus connector. This is used by the optional external 5¼ inch floppy which is connected to the computer by a Byzantine interface converter. It's the same width as the DG-1 and connects to the chassis with two screws. It has to be removed to transport the machine and is another example of unnecessary bulk.

The DG-1 keyboard has a full complement of keys, but the keyboard itself is slightly undersize all over — (imagine that your PC keyboard has been shrunk by about five per cent). The keyboard is well laid out, with the programmable function keys along the top and the ancillary keys like PRint SCreen, INsert and DElete scattered around the fringes of the "qwerty" keys. The four cursor keys are on the right, next to the space bar.

The DG-1 does a very quick test before firing up, unlike the Toshiba that seems to take forever. The clock too has its own separate lithium battery which is good for about three years but must be replaced by the factory when it dies. If you make sure you boot with the DG-1's version of MS-DOS 2.11, it will supply the correct date and time at startup.



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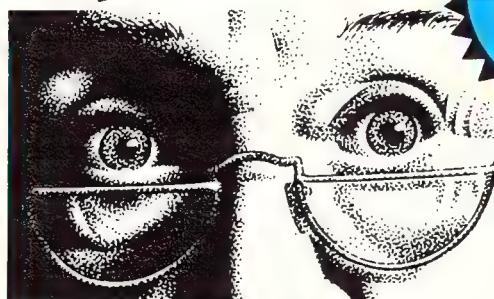
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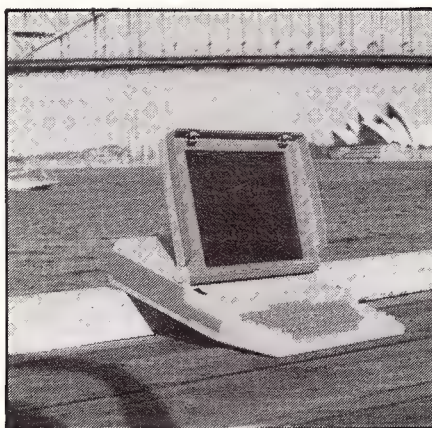
Name	Lotus b/mark (secs)	Save Lotus (secs)	P/Speed (secs)	Display (secs)	D/Speed (secs)	I/O	Supplier	Phone
Apricot	N/A	N/A	N/A	N/A	N/A	1 Centronics, 1 RS232C	Barson Computers	(02) 888-9444
Data General	15.20	39.30	10.40	10.30	17.20	2 Serial, 1 RS232/422	Data General	(02) 895-8311
Ericsson	14.80	2.8 (2)	9.90	11.10	12.20	Serial, parallel, expansion bus.	Ericsson	(03) 309-2244
GRiDCase	11.94	16.60	7.70	8.70	9.90	Parallel, serial, modem, expansion chassis, RGB monitor	Vicom Australia	(03) 62-6931
HP 110	9.10	17.5 (3)	N/A	N/A	N/A	RS-232C, HP-IL, GP-IB	Hewlett Packard	(02) 888-4444
HP	11.36	N/A	N/A	N/A	N/A	RS-232C, HP-IL, GP-IB	Hewlett Packard	(02) 888-4444
Morrow	15.20	13.20	11.70	14.50	11.80	RS-232C, parallel, composite video, RGB, expansion chassis, 2 Bell	Archives Computers	(02) 922-3188
Toshiba	14.40	47.40	9.90	10.50	30.00	RGB, Parallel, ext floppy disk, opt serial port	Toshiba (Aust) P/L	(02) 887-3322
Visual	14.20	13.30	10.80	13.10	11.10	Expansion port, 2 RS232C, Parallel, RGB, Composite video	Kenelec	(03) 560-1011
NEC 8401A Starlet	N/A	N/A	N/A	N/A	N/A	RS232 parallel, cassette	NEC	(02) 438-3544
IBM	14.3	12.7	9.70	10.70	12.10	Purchased separately	IBM	(02) 234-5639
Canon	11.8	14.5	7.50	8.60	13.60	Parallel, Serial	Canon Australia	(02) 887-0166

The DG-1 comes with a number of functions built into its Read Only Memory, all of which can be accessed while in the middle of another program. The first is a notebook which you can jump into to jot down notes, or use to store files for transmission to and from a Data General mainframe. Files coming in will go there too, but you must remember to save notepad files to disk because the contents disappear when you switch off.

Also built in are communications — including the ability to talk to Data General mainframes, configuration options which allow you to set screen options, configure the ports and tell the computer how many disks you have. Up to three are allowed.

The disks, one or two 3½ inch microfloppies, are well muffled but unfortunately lack lights to tell you when they are active. This could lead to accidents if you pop out a disk at the wrong moment. Data General also supplied an external 5¼ floppy disk that was almost as big and heavy as the computer it was supporting. But it worked perfectly and greatly simplified our job of copying the test software onto 3½ inch disk format.

Data General's inexperience with portables really shows up in its peripherals. Where everyone else gets by with an all-in-one mains power supply and battery recharger, the DG-1 needs two boxes, one for each function. What's more, they are bulky. Someone was not



thinking when they designed the power supply because if you plug in the battery recharger, all power to the computer is lost — along with anything you had in memory at the time. To recharge the batteries while continuing work you have to plug in the power supply as well.

On the plus side, these devices auto-

matically adjust to whatever voltage is coming in through the power point. They do however have the effect of swelling the system's total bulk. Apart from the disk drive (which you definitely would not want to be carting around with you though it works fine) we have not seen any of the DG-1's other peripherals and can not comment on their bulk.

None the less the DG-1 is a formidable portable, packing more into less space than anyone else except HP. Though roughly a third longer than the 110 and three times taller than the low profile GRiDCase, the DG-1 manages to contain up to two disks, a keyboard that does not need the trick fingering of the GRiDCase and the Morrow, and the biggest LCD screen we've yet seen on a portable computer.

The documentation is excellent and there is even a beginners disk to help the uninitiated come to grips with ins and outs of computing.

For: Big LCD screen, best keyboard layout, takes two disk drives.

Against: Cramped keyboard layout, bulky peripherals.

Sum up: An impressive PC debut machine.

PORTABLES

GRiDCase

The GRiDCase is the Rolls Royce of the equipment in this survey. A tool and a superior status symbol, the machine looks like the sort of exotic equipment that one sometimes sees in the back of Playboy. And just to add to the glamor, the GRiDCase is the portable computer selected by the FBI for its field agents.

The machine has a very low profile but it is still big. To illustrate, while two HP-110s neatly filled a briefcase, the same briefcase will only take one GRiDCase with a few folders on top.

It feels tough, the case is black painted magnesium, and underneath it has an 80C86 processor (the C denotes CMOS, complementary metal oxide circuitry construction), which makes it a real high performance machine. Just look at the benchmark times!

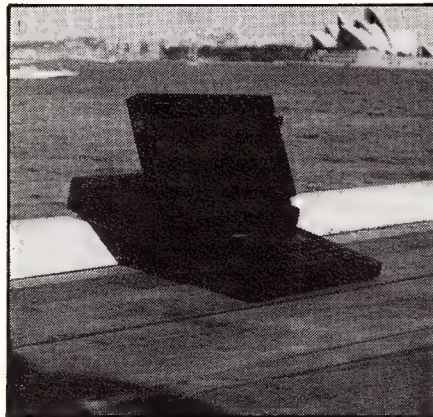
At the back of the computer is a small forest of plugs and connectors: a DIN plug which accepts a standard IBM keyboard, a socket for the optional built-in modem, an RS-232 interface, an expansion bus for connection to either other GRiD peripherals or an IBM PC expansion chassis, a Centronics interface, RGB monitor output socket and the removable rechargeable battery pack.

A large and very stiff foot at the rear also drops down to tilt the whole of the machine nose down. This foot has to be deployed when the machine is in use because the GRiDCase uses its magnesium case to get rid of the heat generated by the system. The front opens up in the usual clam-shell manner to reveal the keyboard and the screen. The GRiDCase is available with three screens, an LCD screen, what GRiD calls its enhanced LCD screen or a gas plasma screen. The gas plasma, which glows with a reddish hue, is excellent for presentations and so on, but reduces battery life from around eight hours of normal use to two.

Our machine had the enhanced LCD screen and it is definitely worth the extra \$200. It has a gold tint which, subjectively, seems to reduce the contrast. Yet the screen is definitely easier to read under good conditions than the other conventional LCDs. Unfortunately the lid cannot always be tilted back far enough to catch the light, nor does the screen always want to stay at the angle you select.

The keyboard has the best touch of all in the survey with a very crisp feel and a very positive action. Special keys, such as BREAK, PRint SCreen, INSet and DElete live on the "qwerty" keyboard and are accessed by first holding down shift and then a special function key.

However there is a problem. The



GRiD has to satisfy two masters, MS-DOS and GRiD's own integrated software system. This requires the use of a special key called CODE.

Two such keys are provided adjacent to the space bar. However they also double as the ALT and Function keys.

An interesting touch is a panel in front of the keyboard which lifts up to reveal four ROM sockets. Up to 512K of software can be installed this way, and software already available in this format includes *dBase II*, *Multiplan*, *Crosstalk* and MS-DOS itself. A large range of GRiD-OS software is also available in ROM including terminal emulation.

The GRiDCase pays special attention to the problem of exchanging files with desktop PCs, none of which so far use the 3½ inch disk format. The GRiD comes with a special program called *PCslave*, and a 5¼ inch disk so that you can run it on a PC as well as the GRiD. By hooking the two machines together with a null-modem cable, a cable designed to connect two computers together, one computer can be slaved to the other and use the other's disks as though they were part of the host system. Very neat.

Once up and running, the GRiDCase proved to be very quiet and reliable, displaying only one major incompatibility which was a refusal to display the cursor and the screen border on our copy of *Lotus 1-2-3*. This is surprising considering it handled all the software

that caused problems for other machines including *SuperCalc III* Version 2 and *Open Access's VIEW* module. GRiD offers its own version of *1-2-3*, so that problem is self correcting.

The GRiD is available with a wide range of peripherals which include a base-station battery charger, external 3¼ and 5¼ inch floppy disks and a 10 megabyte hard disk.

For: Rugged construction, IBM compatibility, enhanced LCD screen, keyboard feel.

Against: Keyboard layout, weight, price.

Sum up: If only it was lighter.

NEC 8401A Starlet

The NEC Starlet is the odd machine out here, in a number of ways. It is the only CP/M machine in the comparison and the only one that uses a Z80 processor. On the other hand the NEC is tiny, smaller even than the HP 110. It is also not nearly as powerful.

The machine is descended from the original PC 8201A by Kyocera, the machine which also appeared as the Tandy 100 and the Olivetti M 10. However where the new Tandy 200 is a refinement of the original, the NEC Starlet abandons the earlier machine's proprietary operating system for a cut-down version of CP/M. There is 64K of software in ROM, and the machine can store up to 32K's worth of files in its on-board memory.

Opening up the clamshell lid reveals an 80 column by 16 line screen and a full size keyboard. The keyboard has a number pad built in and unusually for machines of this class, it actually manages to place the cursor keys in their own diamond-shaped array.

At the back of the machine are a full array of ports including an RS 232, a parallel, a DIN plug for connecting to an external cassette machine, two Bell plugs for phone communications and a plug for the recharger.

A spring loaded cover on the side opens to reveal the expansion slot connector port. It is here that you can either add more memory, or the optional disk drive. The Starlet comes with several programs built in to its ROM. These include a slightly cutdown version of *WordStar* (which works in exactly the same manner as its big brother), a spreadsheet which reminded us somewhat of the original *VisiCalc*, a com-

PORTABLES

prehensive communications program and a list manager.

Like the HP, the NEC keeps everything in a built-in RAM drive and never switches off. You can leave it in the middle of a job, come back hours later, turn it on, and find everything exactly as you left it.

The NEC displays a list of options at the bottom of the screen which correspond with the various programs and utilities it has stored in ROM. One need only select one with one of the five programmable function keys at the top of the keyboard, point at the file to be worked on with the cursor and hit RETURN.

Special attention has been paid to the NEC's communications software which handles a full range of baud rates (up to 19,200), parities and all the other parameters necessary for communications with a wide variety of machines including mainframes.

Our test machine was one of the first in the country and only had 32K of memory on board. So configured, the system split the memory, giving half to the processor and leaving the rest as a 16K RAM disk. In this set-up we were able to create a 10-page *WordStar* file, but could only save five pages to the RAM disk without *WordStar* saying it was out of disk space.

The spreadsheet, while by no means as powerful as say, *Lotus*, contains all the necessary basics to enable users to create reasonable complex models.

Though not in the same league as the MS-DOS machinery reviewed in this summary, the NEC is a good little portable that should prove popular with journalists, salesmen and those constantly on the move looking for a small, light, versatile computer. We like it.

For: Small size, weight, easy to run. Price. Uses regular batteries.

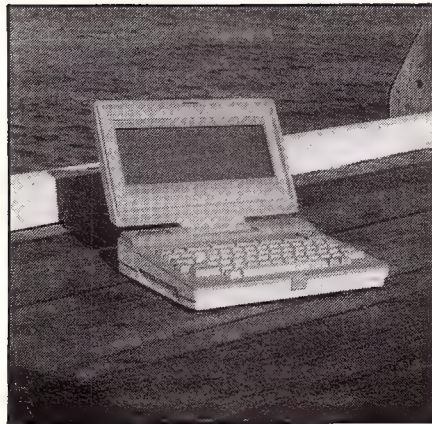
Against: Limited onboard storage.

Sum up: Good down-market portable.

Apricot Portable

Apricot takes a different approach to computer design.

The disk format is the same as that used by all the other 3½ inch drives in the equipment surveyed when using the 360K, double density format (Hewlett Packard excepted) but it goes off on its own when it comes to quad density and



a more useful 720K of storage.

Though the Apricot is an MS-DOS machine, special software supplied with the computer turns it into something of a pseudo Apple Macintosh, complete with icons and an optional mouse. This, coupled with a tutorial program that

shows users how to drive the machine, makes it particularly friendly and a good choice of portable for the first time user.

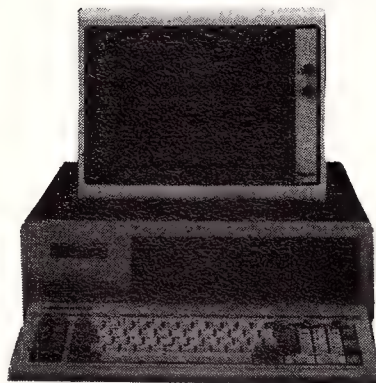
An unusual accessory is the voice command system which allows you to drive your computer with the aid of a slim-line microphone. A bug in the voice tutorial program and a missing manual prevented us from trying this out.

The Apricot Portable comes in a plastic carry case, which is adequate for simple commuting, but feels too flimsy for a trip into the bush. The catches are difficult to open and fragile. We were shown how to open them without damage and still managed to break one. Worse, the case is unbalanced when packed and will not even stay upright on a carpeted floor.

The machine comes in two parts — a

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PORTABLES

keyboard and the main unit which includes the LCD screen, single disk drive and computer. An infra-red link allows you to work without having to physically attach the keyboard to the main unit. However positioning is then important and an optic fibre connector cord is supplied as an alternative.

Once unpacked, the Apricot shows itself to be a stylish machine. Lights show when the disk is working, if CAPS LOCK is on, if the shift key is depressed and whether color has been selected. A ruler line on the right of the screen marks the 25 lines of the display. The screen is good by LCD standards but unfortunately its angle is fixed so that you cannot tilt it.

There's a panel at the back which comes off — not without some difficulty — to reveal a Centronics port, an RS232 port and an expansion bus expander. It also exposes a good deal of circuitry.

The keyboard looks stylish and is well laid out. Though the cursor keys and the number pad are separated, you use the number pad like the cursor keys when working without a mouse. Those accustomed to IBM keyboards will feel right at home, but newcomers will find it disconcerting.

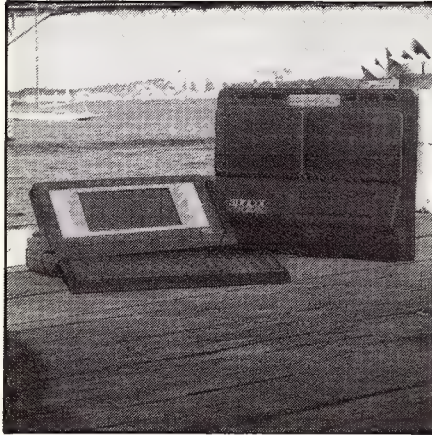
Four buttons above the keyboard allow users to reset the machine, set the repeat rate on the keys, set the time and date, and lock up the keyboard so you can leave the machine unattended. Since the button is clearly labelled, we must query this function's usefulness.

The Apricot comes with an icon driven shell called *Activity* which insulates the new user from the intricacies of working with DOS. A tutorial program guides new users through the basics and should have them working within an hour. A diary, a sketch program, *SuperWriter*, *SuperPlanner* and *SuperCalc* are also supplied as standard, along with an icon editor, a character font editor, a program that allows you to reconfigure the keyboard and another to configure the computer itself.

However insufficient thought has been given to getting files from one floppy to another on a one disk machine. The Apricot's *Activity* shell allows you to copy an entire disk, or one file at a time, but not multiple files. Worse, the portable's version of MS-DOS only recognises the "AL" drive, unlike everyone else where the machinery pretends

it has two. You must therefore use a special parameter with the standard COPY command and it still only gets one file across at a time.

But the Apricot Portable is IBM incompatible. Instead it uses The Sirius standard with a screen resolution of 800 by 400 pixels. A few machines in the



Apricot range, notably the F1 and the Point 7, use a lower resolution screen — 640 x 256 pixels. The portable alone uses a 640 x 200 screen format, the same as IBM. However it is otherwise still an Apricot. This unique — to Apricot — screen format means software must be specifically modified to suit the machine and so far not much of it has been. That is why we could not get *1-2-3* or *Open Access*, though we are informed that it will be available Real Soon Now.

The Apricot came with *WordStar* which worked as normal, but not Basic, so we could not run our benchmark program. However Peter Norton's SYSINFO program worked and that gave the Apricot Portable a performance rating of 1.1, the same as the Canon A-200 desktop computer and the GRiDCase. Since all three have an 8086 processor running at 4.77 MHz, we would expect the Apricot's benchmark times for computing and display speed to be similar. The disk though is slower than average, as shown by the *WordStar* benchmark.

Nice friendly machine that the Apricot Portable may be, we would tend to pass it over for one with a larger software base.

For: style, voice commands, icon software.

Against: Keyboard, small software library.

Sum up: An incompatible's incompatible.

How we rated them

When looking for a computer to take on the road, there are many considerations which simply do not enter into one's calculations when ordering a desktop machine.

Questions like: how heavy is it? Will it fit into a briefcase? What's its battery life? Depending on your needs, these may be more important factors than the traditional ones: How good is the screen? What's the keyboard like? and, Is It Compatible?

Then there is the price and here a look at the specifications table reveals a sad truth — it's harder and more expensive to make a good little 'un than a good big 'un. Battery life is one of the most important considerations in choosing a portable and in that respect, the diskless HP 110s lead the field in this survey with a claimed working life between recharges of 20 hours.

All the machines have a low battery warning but you don't get much time. Only the 110 tells you how much power is left and shows this as a percentage. Overseas travellers should pay attention to the battery rechargers supplied with their machine for only the GRiD, the Data General, the Ericsson and the Visual allow you to adjust to 110 volt systems. The others require a second recharger.

The HPs are noticeably smaller and lighter than anything else surveyed, next is Toshiba followed by the rest of the lap portables with the Morrow trailing the field.

The HP scores further points by offering a range of light and compact battery-powered peripherals in the form of an external disk drive and an HP-IL Loop version of its excellent little Thinkjet printer. If size, weight, battery life and sheer portability are the main criteria the HP wins.

Both the HP and the GRiDCase take special measures to facilitate file exchange with PCs. If you want to communicate with a mainframe which comes from either Hewlett Packard or Data General then there is no good reason to go shopping elsewhere.

Compatibility is another issue — but compatible with what? Both the HP and Texas Instruments' nifty little Pro-Lite lap portable are fully software compatible with the PCs made by their respective manufacturers. (We reviewed the TI when it was first released and are confident it would have shown up well in this survey.)

Most offices use the IBM PC standard and there is a wide choice of machinery, all with different advantages and disadvantages. Of the IBM compatibles, the Toshiba is cheapest but has problems with its LCD screen. The GRiDCase is comparatively big and heavy, but has an excellent screen, is very rugged, offers the option of software in plug-in ROMs and has a full complement of external peripherals.

The DG-1 suffers from bulky peripherals but has one of the best keyboards of the machines reviewed, space for two micro-floppies and the only full-size screen in the lap portable market.

Finally there's the Morrow Pivot. Though bigger and heavier than any of the other lap portables, it uses standard PC disks and has a screen that marks a genuine breakthrough in design. Unlike the other portables surveyed, it uses PC-sized disks. However none of these machines are 100 per cent compatible.

The DG-1 doesn't run the standard PC version of Flight Simulator and neither it nor the Morrow will run Concurrent PC DOS. In fact, all the lap portables we tested tripped up somewhere during our test sessions.

Perhaps the best sign of incompatibility out on the software fringes comes with a program called *Nokey* which allows copy protected software to be run from a hard disk without the presence of the original master disk. This program, which works fine on the Canon A-200, the IBM PC, the Ericsson Portable and the Visual Commuter, locked up every one of the lap portables, though we discovered it too late to try on the Morrow.

This means that for true compatibility, you have to move up to one of the transportables and this is a good case to make for them.

Both the Ericsson and the Visual Commuter ran the most difficult programs without hic-cups. The Visual scores on price, the Ericsson with its lower weight, electro-luminescent screen

How we did the tests

By Gary Ross

The last time we compared a load of computers (see June issue of *Today's Computers*), we needed a large van to cart them from our tiny office to the room kindly lent to us by Deloitte. This time we easily fitted all the machinery into my (not very big) car.

That was not the only thing that was different to the last time as not all the assembled machinery was IBM-compatible. To get around this and to provide a valid bases for comparison we asked all the incompatible manufacturers to supply three items of software — *Open Access*, *Lotus 1-2-3* and *WordStar*. The idea was that with identical software we would be able to run the same tests on all the machinery.

Unfortunately, neither *Open Access* nor *1-2-3* are available for the Apricot Portable yet, while the HP 110s turned up with *Lotus* and *Microsoft Word*. So we went ahead with what we had.

A new addition to the test schedule is a benchtesting program written in Basic by Peter Norton.* This program comprises three modules — one tests absolute processing speed, the second times how long it takes to update the screen and the third times disk speed. The program is also self-timing, which makes its findings very reliable.

To allow comparisons across the IBM compatible line, we also included several tests involving *1-2-3* and *WordStar*. The *1-2-3* test involved timing the same test spreadsheet used recently in

our spreadsheet round-up in which the formula:

$\text{SQRT}(((A1+A1-A1)*A1/A1)^2)+1$, was copied into all 400 cells of a 20 by 20 spreadsheet and then calculated. We also timed how long it took to save the file.

The *WordStar* test is a good indicator of overall disk speed and involves saving a standard 68K test file. Because of the way *WordStar* spools copy on and off the disk, this can be a lengthy process, especially if you first go from the start of the file to the end and back again — a process that forces *WordStar* to make multiple copies of the original. Saving under these conditions forces *WordStar* to go through a tortuous series of exercises with copy being spooled from one file to another.

Thirty seconds is a good time for this test, though machines have done it in less than 26. The slowest time recorded so far is a minute and a half.

As mentioned above, the comparison was held in a room kindly loaned to us by Deloitte, Haskins and Sells which has the space our office lacks.

When we had all machinery running to make direct comparisons, interested Deloitte staff came to look, poke and prod. A number of their comments have found their way into this report.

* Peter Norton is an expert on PCs and author of *The Norton Utilities file-recovery programs* ■

and well thought out design. But none of the transportables are as small, or as light as the lap portables. We predict however that the Ericsson's innovative approach to portable design will be copied in the future.

So what machine would we buy? If IBM compatibility is unimportant, we'll take the HP. If working to a budget, the Toshiba. If plagued by bad eyesight, the Morrow. If the machine is needed to give customer presentations, either the Ericsson or the GRiDCase with an electro-luminescent screen. If out to impress, the GRiDCase. If maximum compatibility is required, the Ericsson.

If money is no consideration, we'll take the DG-1 with two disks, a spare battery pack and 512K of memory . . . among all we tested, with all their faults Data General's offering has the least.

It gets our nod, but only by a short half head from a field that's bound to improve within the next six months. You may prefer to wait for improved performers or new entrants into this highly competitive class of computing.

There are more portables which we had neither time nor space to review this month. They can be found in the hardware guide, beginning on page 140. ■

Bob's staff demand PCs

By John Kavanagh

When Bob Ansett decided he wanted personal computers for his business he approached the project in a typically entrepreneurial way.

Rather than assigning his data processing people to equip Budget's staff and train them he decided to keep the project loose.

He bought six PCs and gave them to selected head office staff and waited for them to report on how the machines should be used by Budget. The result?

"We have people demanding PCs because they can see how applications will improve their work," says Ansett. "We do not know the full potential of these machines yet but we know from the reaction of the staff that they have remarkably more potential than we thought. It makes sense to give them to people and observe how they get used."

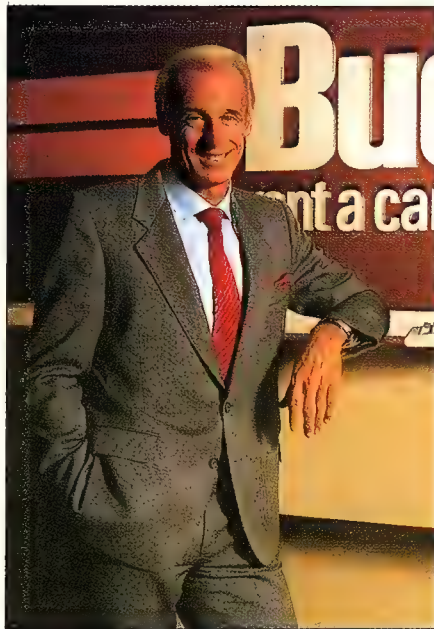
It is no surprise that Ansett should introduce PCs into his company this way. He has used the same combination of motivation and competitive drive, along with clever marketing strategies, to take Budget Rent a Car to the top of the Australian car rental market.

Recognising achievement and giving it the appropriate rewards are central to Ansett's business philosophy.

Budget is going through a strong growth phase. The company took the lead in the car rental market in 1981 when, after several years of struggling against the Avis airport service monopoly, it snared a 40 per cent market share. The company went through lean years in 1982, when Ansett was forced to lay off staff and in 1983 reported a loss.

But Budget is in a strong position today. It has more than 650 people staffing 230 outlets in an operation spread throughout Australia, New Zealand, the South Pacific, Malaysia and Japan. Last year the company reported an after tax profit of \$1.5 million on total revenue of \$114 million.

With an operation of that size and a fleet management operation covering more than 19,000 vehicles, Budget's computer system came under strain last year. Rob Clifton-Steele, Budget's director of finance and company secretary, says the company began to



Bob Ansett: gave PCs to selected head office staff.

realise in mid 1984 that its Datapoint system could no longer cope.

"We have used Datapoint since 1974 for administration and operational control," says Clifton-Steele. "We have had a national network for our reservation system for five years. It has been a good system because it allowed us to grow from a very small company to a medium sized operation. We just kept plugging in new bits but we got to a processing power constraint with Datapoint and were concerned at the ability of Datapoint to provide us with packaged solutions."

Clifton-Steele was looking for a system that could handle a much greater processing requirement and would run with cheaper packaged solutions. He set up an evaluation project in November last year and by April had selected an IBM System 38 and a Software International accounting system. Contracts were signed in May and the system was up and running in July. As part of the deal Clifton-Steele ordered 50 PCs from Parity.

"Our executives and senior people had some experience with personal computing," says Clifton-Steele. "I used

to run *Multiplan* on a Datapoint terminal for cash forecasting.

"People in finance were using *Multiplan* for accounting analysis reports and cash flow analysis and we used the Datapoint system for some office automation functions; along with the word processing we have a telex interface. Bob uses both of those."

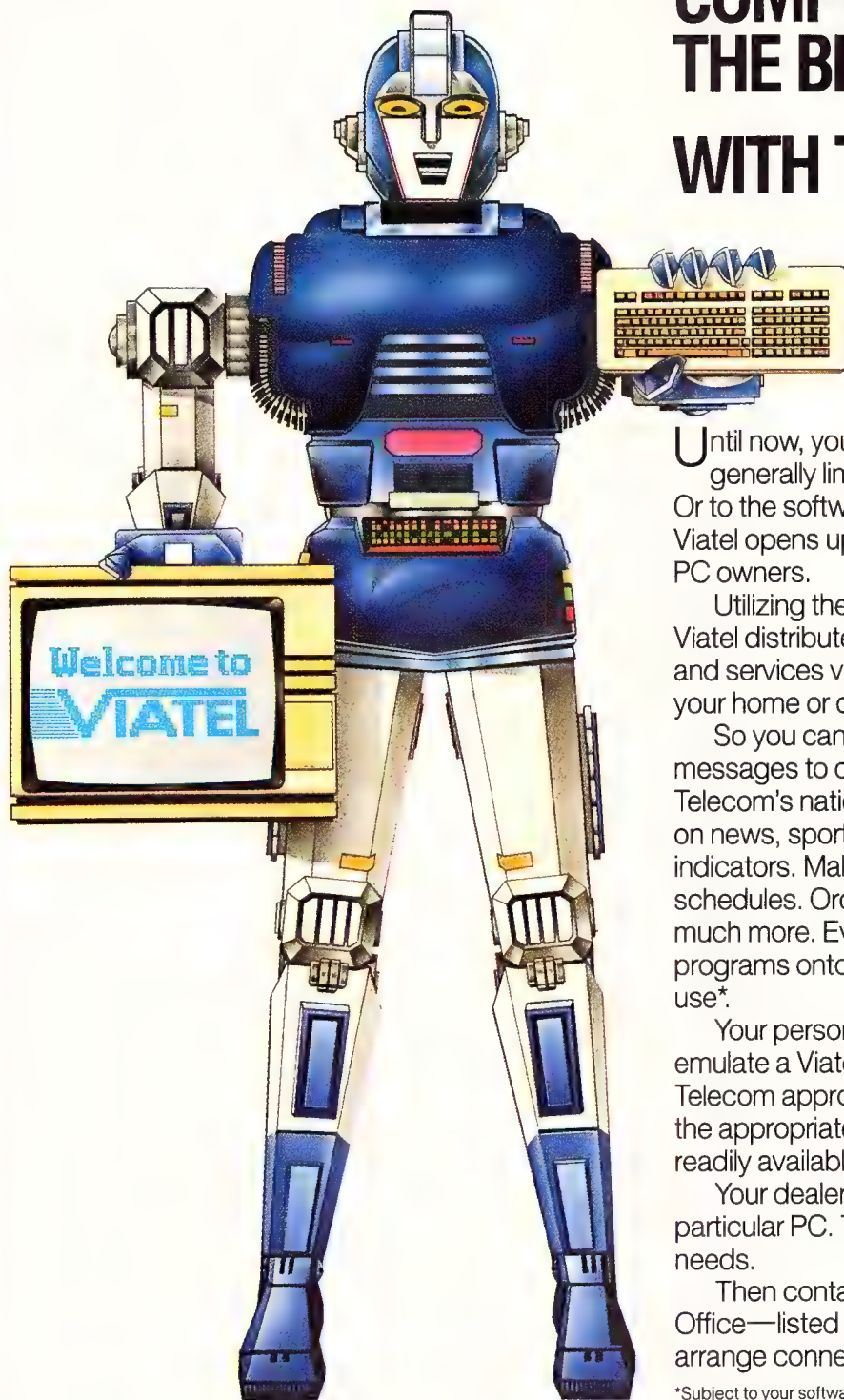
"It is important for a medium sized business like this to get the best value out of a system. For example, each Thursday we produce our fleet statistics and our weekly revenue reports. Those are made up from reports sent in from our branches. The branch reports come in on a telex and are then keyed into terminals. Because of that double entry procedure we lose half a day in the preparation of weekly reports. We would benefit from integration there, and there must be hundreds of examples like that."

The PCs that have been distributed in the head office are used in accounting, fleet control, credit reporting, accounts payable, corporate leasing and treasury.

"We gave them to people who would understand how to use them and show us how the whole company could benefit from them. We have a high demand for more now and we have set up a users' group and a support group. I think the mode of implementation will change as the project evolves. We will understand more in another six months," says Clifton-Steele.

Bob Ansett has big plans for the continued growth of Budget Transport Industries. He opened the company's first Tokyo office in April and has added three more since. Budget Air Services has good prospects with franchises in Melbourne and Brisbane. Ansett continues to foil his competition with clever marketing; he was the first to introduce flat rate rental, which took a lot of the confusion out of the market and has added half day, stand-by and plan ahead rates. Budget's market share in car rentals was 55 per cent last year. Ansett is confident he has a computer system that will cope with the continued expansion of the company while the PCs will provide his staff with a good tool for thinking up new ways of doing business. ■

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The electronic noose

A world expert on computer-assisted marketing explains how a large network of customers can be locked in by one supplier

By Tony Thomas

Business executives mostly see their computer systems as tools for efficiency and cost savings, but unless they recognise ways that computers can be used in marketing to strangle competitors, they may find their own necks in a computerised noose.

In the US today, companies that are the first to create innovative ways to tie up customers and suppliers through computer linkages are gaining in one hit an extra market share that would normally take years of effort and millions of dollars in promotion and advertising.

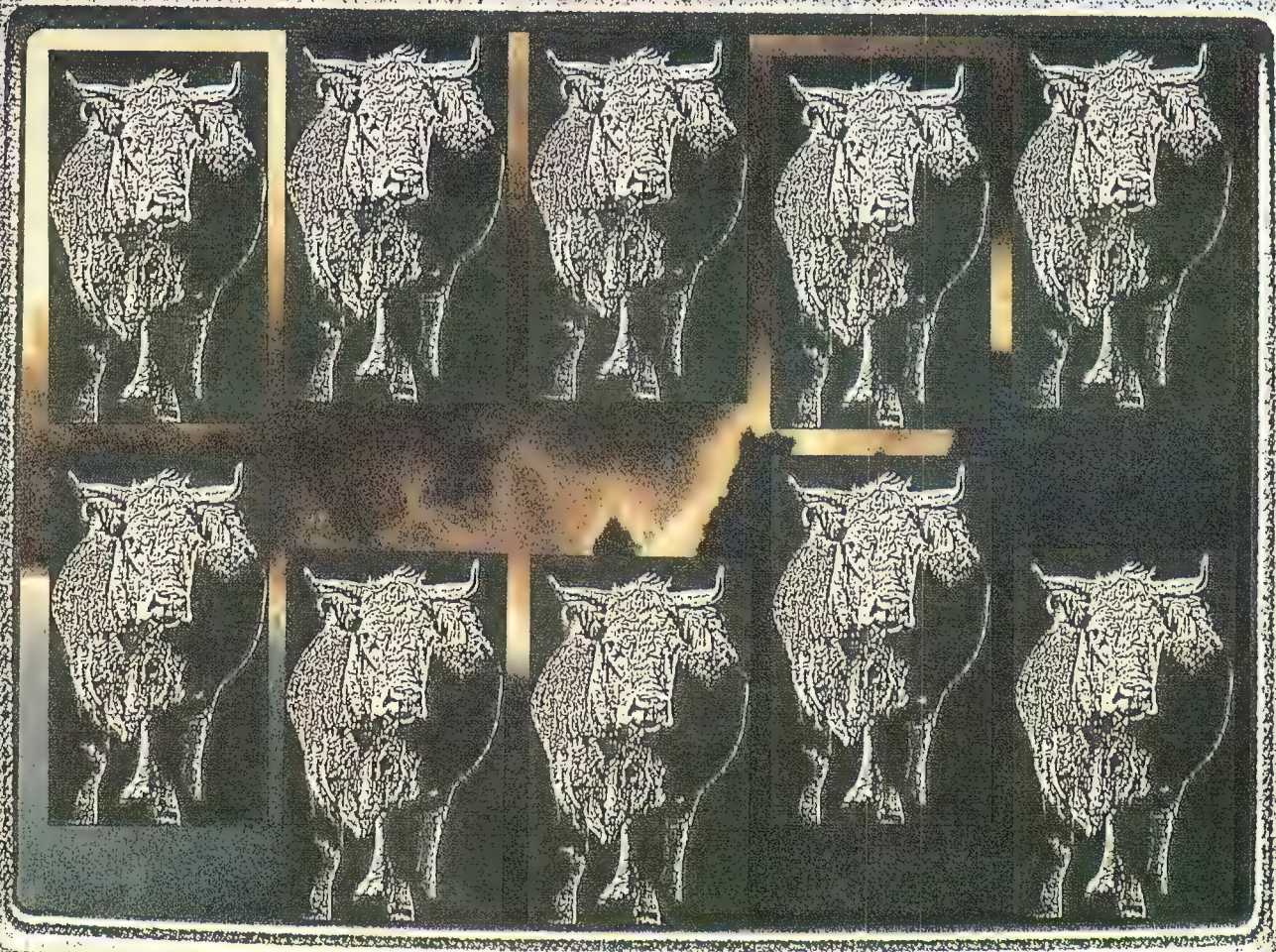
"Strategic planning" has virtually become synonymous with developing the software to tie up clients in an electronic web.

One of the world's leading experts in computerised marketing is Professor Warren McFarlan of Harvard Business School. Price Waterhouse Australia brought him to Sydney and Melbourne for a couple of days of lecturing. McFarlan spoke without notes and blasted the audiences for five hours with case studies. "There is genuinely exciting use of this technology. You can stamp your competitor into the ground, and kick the living hell out of him," he says.

And since McFarlan himself is a consultant on the subject to companies including IBM, Bank of America, Barclays, BP, and ICI, he knows his stuff. His audiences emerged with the dazed look of people who had learnt something profoundly important.

ILLUSTRATION: BRENT WARD





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To set the scene, let's look at one instance — how a US chemical company took over the direct distribution of its fertiliser from a long chain of middlemen, at the same time locking thousands of customers into its own brand.

The chemicals company first created an aggressive incentive system to help farmers buy a personal computer. In the mid-winter slack period, farmers sit down at it and dial up the chemical company's central computer. They access a very sophisticated crop planning model, and answer a battery of questions about their farm, its history, and its finance. The mainframe marries the data with information on input and commodity prices and tax law and invites the farmer to try options, each generating an income and cash flow statement.

By mid-February, when the farmer has to make the hard decisions for the coming crop year, his best option is correlated with a fertiliser purchasing program, organised to take advantage of discounts.

Simply by hitting the space bar twice, the farmer makes a direct order. "Thus a company at the very top of the distribution chain has established a direct relationship with an individual at the bottom," McFarlan says. "Every middle man has been cut out — the whole lot will be squeezed right to the wall. That's without even considering the effects horizontally on rival chemical suppliers."

Many of these value-added services are costly to develop but cheap on a per customer basis for a company with a big market share. For small companies, the same deal could be too expensive.

This technique is what McFarlan crudely calls "giving them a fix of electronic heroin". It was suggested to him that reputable companies would shrink from these and other anti-competitive tactics. He replied:

"I have observed a froth of anticipation on the lips of a chief executive as I describe the techniques. There's more than a thread of nastiness running through them.

"Two years ago I was at a meeting of 200 presidents of wholesaling groups. One was describing how he had cut costs 50 per cent in a decade and was looking forward to a similar cut in the next decade. I realised I was listening to



Professor McFarlan: "A fix of electronic heroin."

the general of an army of lemmings giving a pep talk as they all went over the edge of the cliff to extinction on the rocks below. Those turkeys were carrying on about headcounts, (ie. staff cuts), instead of about entrapping and enmeshing their downstream customers in computer-based support services. Upstream suppliers will otherwise be driving a road through them to the customer's own personal computer.

"The process can take a decade and companies can be very slow to realise what's going on. First their little rivals fail, and they say, 'those fellows were done for anyway'. Then some fairly solid corporate citizens go, and they say, 'Well, I did wonder about some of them'. Then in due course the industry's equivalent of US Steel and General Motors fail," McFarlan says.

The other "nasties" in his arsenal are all being deployed with vigor by leading-edge US businesses. The computer techniques are so novel that even in the litigation-crazy US, the courts have not come to grips with them, so it is open slather.

The "nasty" causing the fiercest controversy is called "screen bias". This covers the fact that if you are operating an electronic directory for more than one client, and US airline reservation systems are the classic instance, clients (including your own business) which are listed on the first electronic page of the directory get the lion's share of the business.

But there is another bit of electronic heroin that makes screen bias look mild. It is called "bundling". A con-

sortium of companies offers a series of products either with cross-discounting (order product A and you get five per cent off product B) or as a monopoly service on a single, dedicated terminal.

Bundling makes bed fellows out of otherwise quite separate businesses. An individual business is going to be either inside a new coalition or a straggler, unless it can create a new coalition to fight the first one.

These techniques have their positive side. They offer suppliers, customers and clients the benefits of software that might have taken \$100 million to develop and it offers them on-line service that makes normal business relationships, ("we'll ship it this week, you should have it in three weeks") seem like the steam age.

We've grouped McFarlan's case studies into six types — vertical service; screen bias, bundling, artificial intelligence, positive service, invasion of privacy, and co-products. If you cannot see the relevance to business in Australia in the next five years, you're not thinking laterally.

Vertical service

A major pioneer was the American Hospital Supply Corporation, the largest US hospital supplier. In 1977 it had a clumsy batch entry and order system with phone lines usually engaged and hospital administrators viewing the placing of an order as less than a great life event. But in the next two years the company developed an on-line order system which now has 5000 terminals in hospitals. It ran aggressive training programs for the hospital staff. The parameters are a 30-second response time and delivery ranging from a guaranteed 24 hours at a fancy premium price to two weeks at a discount price. The terminals were installed with the aim of fixing a clumsy ordering system, but within three months hospital clerks were ditching rival suppliers and making AHS the sole supplier, except for special lines.

The loss of business was devastating to AHS's main rival, Johnson & Johnson, a highly decentralised producer with 250 divisions. In 1980 J & J did a six month study which found that

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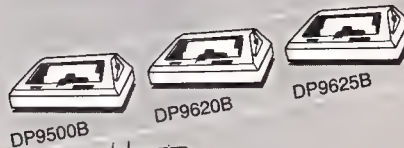
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on items where it was competing head-to-head with AHS, it had lost 40 to 60 per cent of its sales. For three years J & J was in turmoil.

When it asked hospitals to accept J & J terminals and staff training, the hospitals replied: "No way, our business is not the warehousing of 40 types of terminals but the provision of ever-more elaborate and expensive medical care. If your products are so good, why not sell them at a discount to AHS for re-sale to us."

In other words AHS, as the first to open this electronic supply channel, has pre-empted its rivals and captured a basic hospital operating system. J & J only opened its centralised duplicate system last July, 40 months late, with blood all over the floor.

"Once you start a war, you had better stay in there to win," McFarlan says.

In the heavy air-conditioning industry, Carrier Corp in 1980 began supplying Radio-Shack TRS 80 terminals to 2000 architects. The terminal does the air-conditioning preliminary design work. The architects mail the floppy disk and within two weeks they get back very detailed drawings, with specifications ideally suited to a Carrier product. This won Carrier about six points of market share, since architects don't care whose air-conditioner goes in, as long as it fits. But Carrier became complacent, and its rival, Train Corp, persuaded architects to take IBMs and Apple PCs which go on a modem through the phone to a mainframe with the architects' design needs. Within four hours, detailed computer drawings are in the mail, or a summary is delivered express by next morning.

In the first nine months of last year, Train knocked out 50 Carrier systems, then knocked them out at the rate of 75 a month. Now it has 3200 installed and has more than regained its market share.

Train is a very conservative company — white shirts and all that — but it has been prepared to have on payroll 29 systems specialists with beards, jeans and sandals, and the president has learnt to love them.

Another use is for a big customer to arrange "preferred suppliers". In exchange, the producers are hooked on to terminals to the customer's mainframe. The sting is that the customer now



knows all the detail about the maker's production. Any who run low on inventory are phoned by the purchasing manager and told, "Get your inventory up by the following date. We have already begun the 28 day cancellation period for a preferred supplier, but would be willing to halt it."

"It's rough, tough Japanese methods which force the supplier, not you, to carry the inventory and risk," McFarlan says. "US managers are being given a sea of mush about Japanese quality methods and just-in-time systems, which in fact only work for the 12 biggest Japanese companies. Among smaller companies, there is cannibalism that makes Darwin's text seem like Pollyanna."

Screen bias

McFarlan tells how rival airlines delivered the knock-out punch to Braniff Airways with just a few words on reservation screens in travel agents' offices.

About 80 per cent of air tickets are sold through travel agencies and 47 per cent of the agencies are hooked to the American Airlines reservation system. Another 27 per cent are controlled by United Airlines. Other airlines are mostly hooked in using the big two as agents.

Three weeks before Braniff Airways failed, a message appeared on reservation screens against every Braniff flight: "Warning! Warning! Warning! Industry rumor is that this carrier is in financial difficulties. Book seats at your peril." It was a useful public-service-type message. Braniff load factors dropped from 52 per cent to 32 per cent. That was the good news.

The bad news was that no sane travel agent was cutting the tickets on Braniff paper in case its clients wound up thousands of kilometres from home with a worthless ticket. Instead, all the Braniff ticketing was done on other airline paper, meaning the client could renegotiate the ticket if necessary.

"Braniff, instead of getting paid in a seven day cycle, could not even bill the other airline until the client flew the flight, and the other airline could wait four to 10 weeks before paying," McFarlan says. "The computer message put an absolute tourniquet around Braniff's inflow, which quietly but ruthlessly choked it to death."

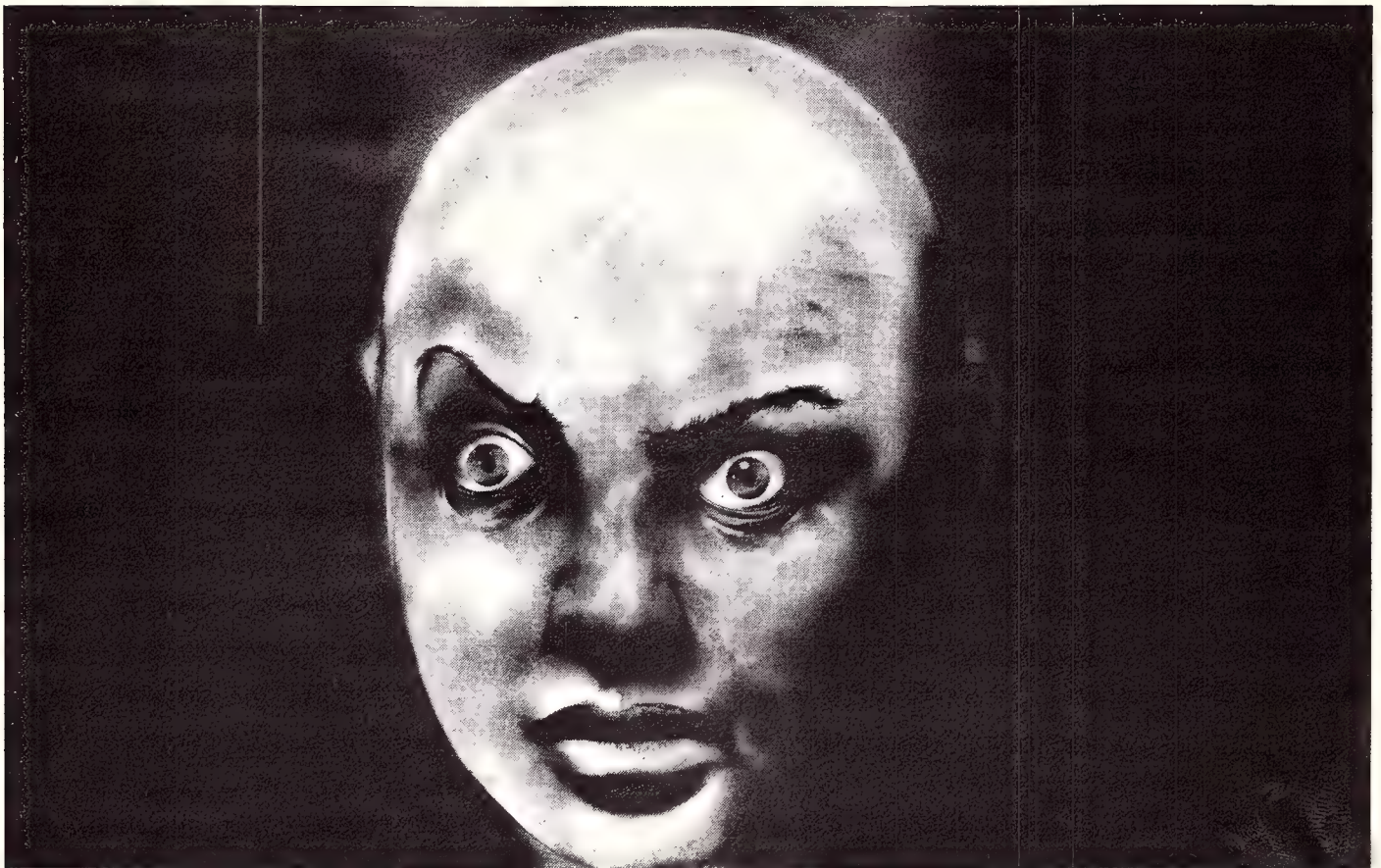
In normal circumstances, screen bias is still pretty dangerous, McFarlan says. In the case of airline reservations, it has been found that 57 per cent of reservations are made on the first flight on the first screen, and 95 per cent are made on flights listed on the first page. Every agent that American Airlines can sign on to its system is worth 30 per cent more bookings to the airline from that agent.

The Civil Aeronautics Board had been petitioned to force American Airlines and United to divest the systems. "The CAB said there should be less screen bias, and then the CAB went out of existence," McFarlan says.

"Now 11 airlines have a lawsuit demanding divestment. I think there's a 50:50 chance they will win. The two big airlines are negotiating — they'd rather sell the systems on their terms than the court's terms."

Cosmetics company Estée Lauder two Christmases ago discovered that many big stores had acquired computer terminals which shoppers could talk to, answering questions about their Christmas list and how much money they wanted to spend.

The terminal would then give a recommended shopping list with an optimal route to take through the store. Middle-aged men were arriving at cosmetics counters with print-outs saying they needed five bottles of this perfume and two of that. "Estée Lauder people spent most of the following year trying to find out who had been the architects of the computer program and then trying to persuade them to alter the software to raise the Estée Lauder prominence," McFarlan says.



Was your software created by the kind of mind that dreamed up Dr Dread and the Death Star?

The essence of a successful video game is its complexity. The harder it is to win, the greater the sense of achievement. Video games pass into history when ten year olds find them too easy.

On the other hand, the most important feature of good financial software should be its simplicity. However, to look at most of the software available on the market today, one would never believe it. Most of it reads as though it was created by the kind of convoluted mind that would have dreamed up a video game called Dr Dread and the Death Star.

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Bundling

Airlines are also paving the way on bundling with their frequent flier bonuses — such as American Airlines' double first-class ticket from Boston to Hawaii if you fly 192,000 other kilometres. "By the time you have flown thousands of kilometres it is remarkable how you will hang around airports just to get that American Airlines flight. That's why Qantas can't get Americans to fly to Australia — they all want to notch up 14,000 points with PanAm," McFarlan says.

"And every night you spend in a certain motel chain, you get a 16 hundred kilometre credit, so people drive past a Hyatt just to stay at a Marriott.

"Renting a Hertz for a day is worth 500 points, and 320 litres of a certain petrol is worth another bonus. For the first time, cars are detouring to get just one brand of petrol, using the garage as a way-station to Hawaii. All the old bonuses of alarm clocks and coffee pots are peanuts compared with that.

"If your competitor gets into a good bundle, you have about 24 hours to assimilate the shock before you announce a me-too bundle. Then you have to work out how to do it."

Pharmacies in the US are being bombarded with near-free personal computers with software to run almost all shop functions, including some medical logic to prevent the occasional dispensing fatality. No drug company controls more than about six per cent of a pharmacy's sales, so the lead bundler for the order-entry function of the computer rounds up a dozen or more co-sponsors.

A feature is that the bundle will not include two direct competitors, so a company has to decide quickly what



bundles to be in or whether it can afford not to be in a bundle. And even if it wants to be in, it may not be organised to make it practicable, as happened to Johnson & Johnson with its cumbersome 250 divisions.

Artificial intelligence

Financial institutions have begun implementing competitive strategies based on the new artificial-intelligence systems, even though AI is still in its infancy.

Take a major US Insurance company and observe what AI is doing for its door-to-door sales. The old style life salesman could sell only life or term insurance and the life companies used to reject anyone brighter than a "C" college average for its sales force.

The second wave of life salesman knocked on your door dressed as a "financial planner". He put you through a questionnaire about your household finances, and tried to sell everything from real estate to stocks

and shares and oil leases. However the job is now too demanding for the sales force.

One life company contemplated replacing its whole 10,000 sales force during the next five years. But instead, from September this year it equipped its salespeople with a three kilogram portable computer. The latest style is for the sales person to knock on your door, spend 20 minutes chatting, then put a floppy disk in the portable and let the machine ask you a long string of questions about the family finances, including attitudes to risks.

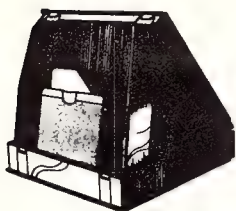
Within 30 seconds the computer produces its preliminary draft of financial and investment recommendations. This appetite-whetting brief could be four pages. The salesman goes back to base and puts the floppy in the main-frame, which produces a 100-page report for the client's use next day.

"More than 100 man years of the best artificial intelligence people has gone into developing the system. They don't believe it can be replicated in under 18 months. Coupled with a massive advertising campaign, they hope that they will create some genuine product differentiation and a marketing edge," McFarlan says.

"This system is not so much de-skilling of a sales force but putting heavy technology right at the point of sale, helping the sales person to do complex analysis. In five to seven years, such systems will be the norm for mobile sales people."

Positive service

McFarlan illustrates from personal experience what computer-based pre-sale and after-sale service can do for a company.



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Compare the PC4i with any IBM-compatible on the market. (Or with IBM!) We've listed some of the most popular brands, and compared them feature by feature.

A quick glance at the chart will tell you instantly that NCR's PC4i should be on your personal computer short-list. And if it isn't, tear the list up.

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And every NCR PC4i comes with NCR-DOS, GW-Basic, The Instructor, Professor DOS, on-line NCR HELP, RAM Disc, user

Compare the standard features of the NCR colour PC4i with the standard features of other compatible PCs.

	Olivetti M24	AWA Corona	Ericsson PC	IBM PC	NCR PC4i
7 Expansion Slots	✓				✓
Centronics & Serial Interface	✓	✓	✓		✓
IBM PC Keyboard Layout with Separate Cursor Keypad					✓
On-screen Help					✓
Self Teach Tutorials	✓	✓	✓		✓
Diagnostic Disc	✓		✓		✓
High Resolution Colour Graphics Monitor (640x400)	✓				✓
8088 Industry Standard Processor		✓	✓	✓	✓
Monitor/CPU/Disc Drive Integration					✓

diagnostics and 256K memory, expandable to 640K.

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model **SP-1500**

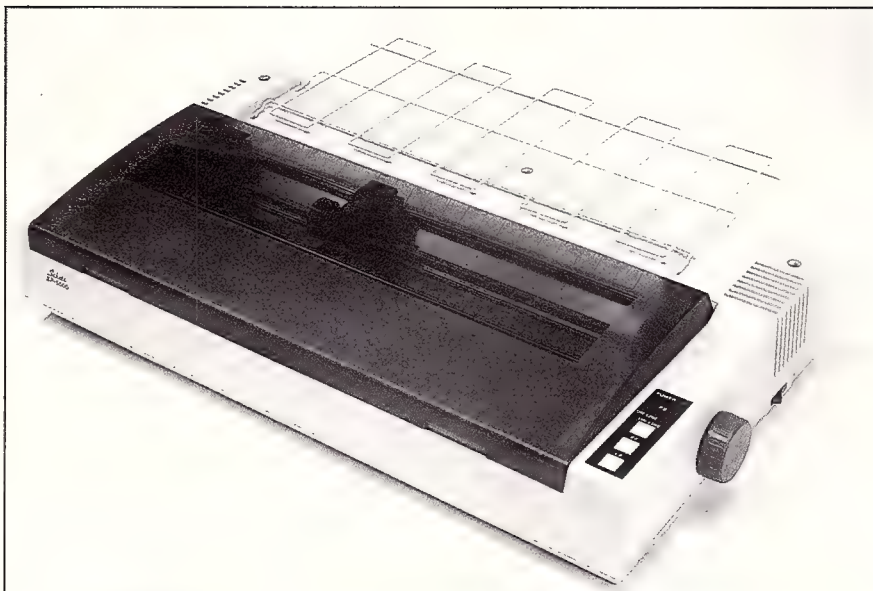
FAST 180 Chars/Sec.
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"I have worked for three years with a \$40 million company that makes big illuminated signs for petrol stations, car yards and hamburger chains. It's not a high-tech company but it has a group of loyal customers and a return on investment that would put yours to shame," McFarlan told the managers at the Melbourne seminar.

"General Motors' purchasing department has three of this sign company's terminals installed. In 15 seconds a GM clerk can dial up and scan a 17-item menu and get every detail of the project status of every outdoor sign we are making for GM. Electronic mail messages to this company by 9 am are guaranteed an answer by 11 am, and 3 pm messages by 5 pm.

"The sign company's EDP staff is only 15 people including a third shift operator. Customers are so loyal that contract renewals often involve a five per cent premium price over the competition. One recent order was to replace every sign in America of a Japanese car maker — thanks to the electronic web of support woven around the product. It reminded the Japanese of Tokyo.

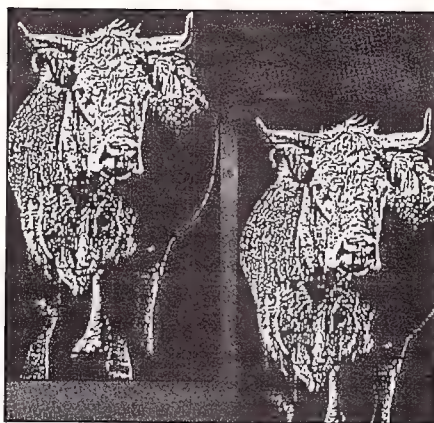
"The sign company also spent \$US 750,000 on computer aided design for its low-tech signs. There was not much direct payoff but the system became the spearhead for marketing. For instance, Kentucky Fried was a \$1 million customer.

"We dragged a Kentucky vice president to our board room, sat him down with an operator at the terminal, and within minutes he was creating his own signs in color graphics — he eventually stayed five hours.

"The vice president left visibly stirred and emotional, saying, 'You guys have got electronic ketchup in your veins' — the highest praise possible from a Kentuckian. This customer may now become a \$5 million a year customer. The presentations are so successful the engineers are bitching that they have to work on the night shifts because the terminals are so tied up."

In a totally different business, Otis Elevator has a three year plan to gain seven points of market share through computerised service systems for lifts. Normally lift faults are erratic and servicemen arrive and find the lift working well, making servicing costly.

Otis is now using aircraft-type black



boxes in lifts. The serviceman removes the floppy disk, plays it by phone to the company mainframe and can be told that two hours and 15 minutes earlier there was a lift fault because of a sticky hinge on the 17th floor. Moreover, the life history of the lift will be dumped out at head office, and a message will go to the serviceman to attend in advance to nine other regular maintenance items.

This has totally re-defined the nature of after-sales support. Similarly, service of heavy machinery is now being diagnosed by hooking a phone to a modem on the machine for remote fault-finding.

Invasion of privacy

Smart companies no longer do their marketing with a blunderbuss — they use their computers like a sniper's rifle to hit each one of thousands of prospects with a personalised sales pitch.

One of McFarlan's self-described "tasteless assignments" was to help a cosmetics sales program with 10,000 representatives selling by the Tupperware party method. The life of a saleswoman was 15 months because she ran out of friends and the company never got to know who was buying the stuff — saleswomen were quite secretive. After friends dropped away but she had got used to a higher spending level, she could be induced to sell the names for \$3 each. This became the basis of a national marketing effort to individual households, especially those that had bought more than \$100 worth or more than \$50 worth at the first party.

A beauty magazine goes to each, and they get a special call by someone with an 85 item questionnaire about eye

color, skin texture and whatever. Answers are keyed into a portable device, which the sales person hooks by phone to the mainframe computer. Within four days the targets get back a 14-page beauty care program, printed on luxury paper with the sales person selling an average 150 per cent more as a result of the individualisation. And more, if a normal facial cream sells for \$25, what price an individualised formula in a bottle with a gold embossed label bearing the new owners name? "Well, \$75, with a three week payback on your investment," McFarlan says.

McFarlan is bemused that now, when the privacy issue is becoming ultra-sensitive through the new computerisation, the lobby groups who were so noisy in defence of privacy a decade ago are hardly stirring.

"Yet today a lot of data banks can be quietly merged — motor registry data for example merging with car insurance data — and very detailed patterns about individuals emerge. In Western Europe the issues have been much more inflammatory, with government bans on dissemination of data banks on people across borders." ("Actually these cross border flows seems to take place anyway," he says.)

Co-products

The US magazine distributor, ARA Periodicals was in a "dog-eat-dog" commodity business. In the 1970s it used computers merely to cut 15 per cent from its costs of handling unsold magazines and returns. In 1978 it stepped back to see what business it really was in. Its customers were small newsstands and shops cluttered with titles and not really knowing which lines were profitable. But ARA knew precisely how many of each magazine went in and how many went out unsold, and could work out the profit per area occupied of every item on every newsstand. With smart software it could give each stand a profit-improvement report, maybe cutting back *Time* copies by 15 per cent and replacing them with *US News and World Report*, and dropping *Sports Illustrated* and taking specialty sports magazines that were selling well elsewhere in the district. So ARA's new business is newsagency profit management. ■

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Ron Chernick of Arcom Pacific, Australia's second largest software distributor

Economic woes benefit computers

The traditional sources of Queensland's prosperity — agriculture and mining — have taken an economic battering in recent years — so much so that the State government has embraced the silicon chip.

Computer firms are being wooed to move to Queensland as the government develops an array of incentives to attract new technology.

Late last June it opened an Innovation Centre to assist small investors and businessmen in marketing and developing products and ideas.

By Helen Grant

Brisbane woos the silicon chip as agriculture and mining founder

In a bid to heighten awareness of better product design and improve quality, the State and Commonwealth governments have given financial assistance to the Queensland Technology Transfer Council for the introduction of Just-in-Time manufacturing.

The state government has made a significant commitment to developing the infrastructure of Queensland's communications by signing a contract with Aussat for a transponder on the first domestic satellite launched in August.

The transponder, called Q-Net, will be used as a pilot telecommunications network, joining all government departments, statutory authorities and instrumentalities, and 40 earth stations are to be installed throughout the state by June next year.

The Queensland Minister for Industry, Small Business and Technology,

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Mike Ahern, says the benefits are enormous.

"There will be improvements in a number of services including the School-of-the-Air, education, and telemedical services," he says, "Water resources, police, emergency services, railways and power services will also benefit from the satellite."

Perhaps the most significant initiative has been the establishment of two technology parks to encourage manufacture of computer hardware and software.

The government has committed \$3.74 million to build a factory for Sperry Computer Systems and \$1.2 million to President Computers.

Ahern says the factory and land will be available to Sperry through a leasing arrangement. "The advantage here is that Sperry doesn't have all that initial capital cost. We give them a factory and the rent repays capital costs, so there isn't any real cost associated with that."

"These two computer companies broaden our manufacturing base in Queensland. Sperry has made a commitment to manufacture here as against

assembly. It's going to generate extra software development and both companies are having talks with people manufacturing circuit boards and other components." Ahern says.



Dr Bill Caelli says implications of EFT are enormous

Sperry has had considerable dealings with the government. Last year it wrote \$12 million worth of business with it

and in march this year, Sperry won a \$6 million contract to provide 300 personal computers to Queensland schools.

John Harmer, Sperry's Queensland manager, says the factory will supply both the Queensland and Australian markets. "The factory will initially be turning out PCs, but it could be logically extended to produce other products," he says.

Tom Cooper of President Computers accepted the state government's offer because it was "just too good to refuse".

The offer was to set up an assembly plant on government-bought and developed land. He was invited to purchase or lease for two years with an option to buy and says the government offered to organise finance.

Cooper has considered moving to South Australia, but found Queensland more attractive. "I like the Queensland government. They are very open and easy to talk to. They are co-operative, dynamic and well organised."

One of the first established manufacturers to move from Canberra to the Gold Coast is Eracom Pty Ltd. The

YOUR COMPUTER SUPERMARKET

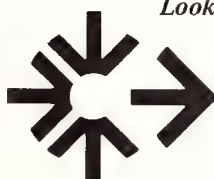
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company builds data encryption equipment for mainframes, networks, electronic funds transfer (EFT) systems and personal computers.

Encryption involves the scrambling and unscrambling of data through a mathematical algorithm. It can secure mass storage and movement over public data transmission lines and on networks. It also allows security for a program or file on a floppy disk.

Dr. Bill Caelli, Eracom's managing director, says it answers the need for small security within a network and allows validation of data such as personal identification numbers (PINS) or digital signatures in EFT.

He claims his company has won contracts to secure EFT systems in most Australian banks and credit unions, and is seeking building society contracts.

Caelli says the implications of EFT are enormous. "I believe we are seeing a phenomenon. Computers taking part in the complete payments system of an economy.

"Think. I come up to these things not with money any more, not with a credit card like a bank card, I come up with a debit card against my building society account. I pay for goods and services using money which I have lent to a building society.

"We are seeing technology starting to affect the way in which the country's payments system runs. Twenty years ago the only way we could pay for a service was by money or cheque, which meant that the payments system was in control of the banks.

"Today that need not be true. Payment can now come out of a credit union account or a building society account.

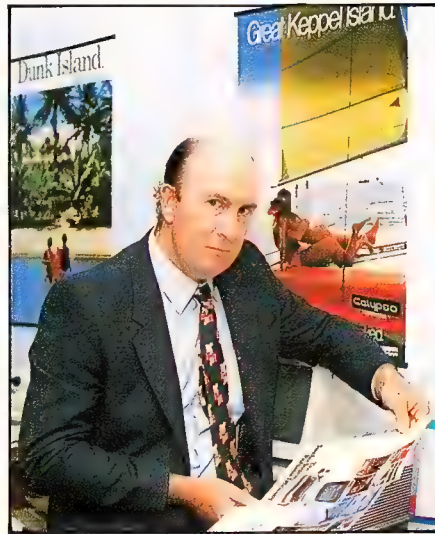
"Our company provides all the security to make that secure. One example of that is the encryption security module. It monitors the security at the host computer and at the switches. We're the only company in Australia that makes them, although we do have some overseas competitors."

The company's biggest installation has been at EPSCO, a Hong Kong Bank's consortium of 26 banks. Caelli says the order starts with securing 3000 point of sale terminals leading up to a target of 30,000.

In Brisbane can be found Arcom Pacific Pty Ltd, Australia's second

largest software distributor.

Ron Chernick started the company in 1977. He says when California's Silicon Valley went through its first



Alan Burton-Jones of Computeracc

shakeout. Arcom purchased Australian distribution rights to Digital Research Products, then known for its *CP/M* and compilers and now for *GEM*; Ashton Tate, known for his *dBase II* and *Friday*, and now better known because of *dBase III* and *Framework*; and Sorcim, better known for *Supercalc* but now hitting the headlines with *Super-Project*.

Chernick says the company has been successful because it has built up good business relationships over the years and strongly supports its product range.

One of the biggest faults of the Australian computer industry, says Chernick, is its lack of marketing clout. "We have great software technology in Australia but poor marketing. There aren't the people in Australia to produce good marketing tools, such as binders and the like. In the US they can provide it cheaper because there is a bigger market."

Other computer companies are also moving into software development in Queensland.

Computeracc Pty Ltd was set up in 1969 selling services to commercial accounting firms and local government. Today, the bureau service is small, but software packages for the hospitality and tourist market, engineering and local government, represent the bulk of the company's profits.

Alan Burton-Jones, the company's assistant managing director, says turnover is large — approaching \$6 million — and so is its product range. "Our packages range from issuing racing notices and dog licences to developing database and expenditure systems to astral mapping systems. It really covers the whole gamut from the administrative point of view," he says.

Computeracc now has 20 Australian sites using its hospitality package and has had sales in Shanghai and Hong Kong. Burton-Jones says the company is likely to set up offices overseas or operate through overseas agents.

Another software company with its base in Queensland is Sunshine State Scientific Systems, which sells database management systems. Director Helen Avery says three years ago they saw the market would be in three areas: spreadsheets, word processing and database management systems.

The first two were already done, she says. The third, was more interesting and also affordable for the micro-user.

Avery had been based in Tasmania until she moved to Queensland in 1978 because there was a more favorable climate towards technology growth and small business.

"We have a supportive government here. If it continues encouraging small high-tech firms, Queensland will become the centre of Australian technology.

Avery sells *Superfile*, a British made database management system and *ACLS*, an artificial intelligence program which roams the users' database to answer "what if" questions.

"For instance, a company may have a table of tests to be applied to finished parts in an engineering shop. Each part must weigh between this and that, be so long plus or minus so much and have a certain width range. These tables can run into thousands of items. *ACLS* can often boil them down to half a dozen crucial tests which cover all the others, giving a tremendous saving of time and money," she says.

Companies operating in Queensland maintain that competition is tough and this aggressiveness was recently demonstrated when Ericsson went after a \$300,000 contract to supply PCs to the Brisbane City Council.

Locals say Ericsson won the contract

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because it offered the council a three year warranty — a great marketing ploy says one competitor.

Trevor Norris, operations controller at the Brisbane City Council says, "We saw them as being a company confident in their product. The computer industry has been associated with very short warranties which seems to be out of keeping with most electronics devices that one would buy."

Data 3 is another dealer showing fast growth. Phil Watts, the company's managing director, says it sells 70 IBM PCs per month and claims an overall growth of 200 per cent on last year's figures.

One of the biggest growth areas is selling a Hospital Information Management and Accounting System and Infocare Health Systems Australia, sold under the banner, *Infohealth*.

Watts plans to expand the sale of health systems throughout Australia and the company has allocated \$500,000 for research and development of health software and \$250,000 for non-health software.

Paul Rees of Computerland Brisbane

says his company has pretty much the lion's share of the IBM PC market. Four years ago Rees had set up another store on the Gold Coast, but found that there was so much business in Brisbane the other store was a distraction.

Rees will not discuss turnover or profits, but says the company has done well enough to twice become IBM dealer of the month. "That's a real achievement, since we had to beat Sydney and Canberra stores," he adds.

The store's products range includes IBM, Apple, Compaq, and NEC. Software is largely restricted to *Multi-mate*, *Word Perfect*, *WordStar*, *Display-wright*, *Zardax*, *Lotus*, *Symphony* and *Multiplan*.

Although many local companies are making good profits, there is still some antagonism over local and federal government preference towards purchasing overseas products.

"Governments have little interest in buying Australian. If there is interest you get unbelievably heightened expectations. The public service will say it has

a 20 per cent incentive to buy Australian — providing you meet the same quality and standards as the overseas product," says Eracom's managing director, Dr. Caelli.

"We don't have a computer industry. How is Australia supposed to jump from where we are now, which is somewhere towards the bottom of the Organisation for Economic Co-operation and Development's figures in technology exports? The expectations are unrealistic," he says.

However, he is more positive towards the Queensland Government. "In Queensland there isn't the massive procrastinating. The state government appreciates that in our business six months is a long time so we don't have to have a review, six committees deep, nor do we have to go through six months very detailed close analysis."

Caelli believes Queensland does have a negative side too, the main problem being a lack of infrastructure. "Most of our suppliers of components are in Sydney so there's a problem. We also have very large telephone bills." ■

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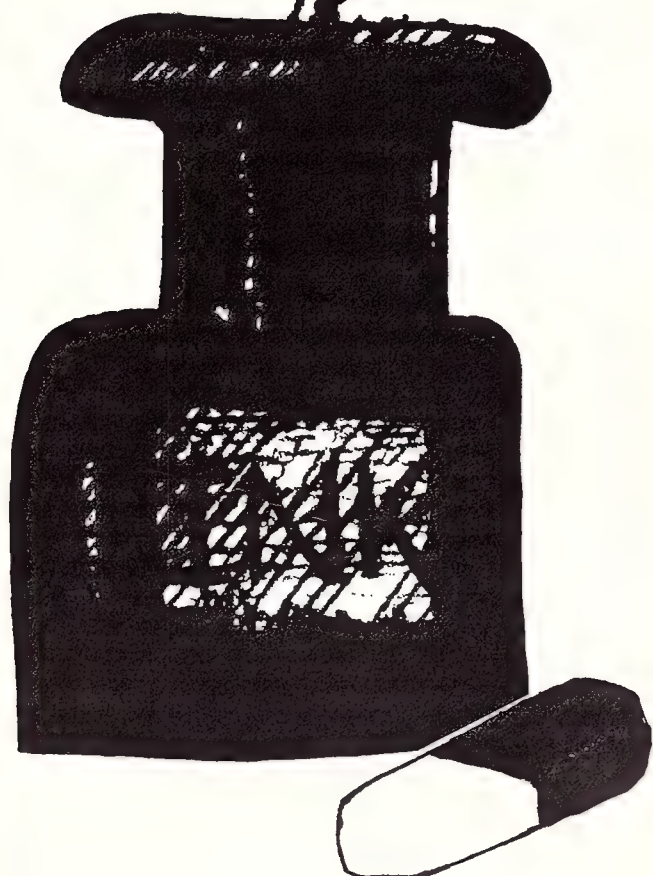
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Big is beautiful

There's a hint of polished mahogany in John Kent's voice, a boardroom quality that carries a certain expansive assurance.

It is the voice of a man who believes big is beautiful when it comes to either profits or computers and that something as small as an IBM PC has no place in his office.

That philosophy is not immediately evident when you visit Kent's Primeland headquarters in Brisbane. There's a full time staff of three, including Kent, in a space that cries out for a dainty business computer with perhaps a red rose drooping beside it.

Instead, visitors are confronted by the massive cube of an IBM System/36 minicomputer. The sheer bulk of the system comes as a shock if you were expecting a petite PC — something like coming face to face with a Great White Shark while fishing for mackerel.

By Peter Young

Queensland property developer John Kent says there is no room in his office for a small PC

What does the \$80,000 heavyweight do for Kent that a muscular micro on the scale of an IBM PC XT cannot do? In a word, plenty.

Kent specialises in developing subdivisions as joint ventures with wealthy investors after ironing out most of the risks himself. He is so successful that potential investors cheerfully pay a fee for the privilege of putting money into

his projects. One reason for their eagerness is that Kent subjects each project to a detailed computer analysis with a gilt-edged bottom line: it must return a profit of at least 30 cents on each gross sales dollar.

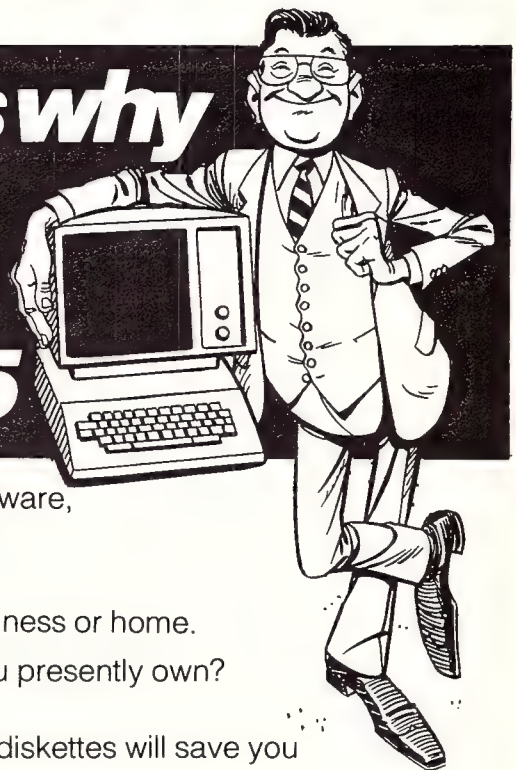
Anything less and Kent does not even bother to buy the raw land.

"As far as using a computer is concerned, it's not keeping tabs on what's happening during the development of the project that is important. What is vital is getting it right before you ever go into the thing because once you're in, there's no turning back," he says.

To get it right, Kent employs the Rolls-Royce of financial modelling software, the Australian-developed Business Modeler. Its capacity dwarfs that of micro-based spreadsheets such as the industry standard, Lotus 1-2-3. Where Lotus sets up a single spreadsheet, Business Modeler creates a model boasting 9999 inter-related spreadsheets.

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Having that type of simulating and forecasting power at his command gives Kent the ability to produce subdivisions the way the Japanese produce cars. It is a technique that's been labelled "just in time" and is the computer-assisted knack of bringing all the components of an article together just before the final assembly.

The concept is being enthusiastically embraced by Australian manufacturers intent on shaving inventory overhead costs and Kent believes he is the only businessman in the country applying it to subdivision development.

"From a management point of view, the easiest way to develop a 100-lot subdivision is to do all 100 at once," Kent says. "The problem with that is you end up with a five-year supply of lots all eating their heads off with council rates and interest and all the other overheads.

"The optimum is to produce a lot today that will sell tomorrow. That's utopian because of the time scale involved in subdivisions, but we are a

whole lot closer to it than any of our competition.

"There are many different ways of developing lots within a subdivision. To manipulate the possibilities manually is too frightening even to think about. Even with a computer it's too frightening unless you have a system like this that is designed specifically to handle it. It gives us the ability to see exactly how things stack up and how changes in strategy affect the numbers.

"All financial modelling does that, but in this case it is the core of our business and not something a company officer is doing outside their mainframe for their own edification."

Kent has built his computer model, which he's labelled SUPER (for Subdivision Project Evaluation and Review) using a high level programming language built into Business Modeler. It does much more than simply tell him the best way of building the various stages of the subdivision so that lots pop on to the market just as a buyer arrives.

It also conducts a careful review of

the financial feasibility of any subdivision he's considering, matches it to the characteristics that meet his requirements and recommends the strategy he should use to acquire the land.

"For example, the computer will come up with suggestions such as: 'Why don't you persuade the vendor to take part of the purchase price in five developed lots? That way you'll get the extra five cents profit on the sales dollar that you need'" he says.

From there the program deals with plan design, government approvals and supplies an enormous construction checklist. That is followed with more spreadsheet cells devoted to marketing, maintenance and holding aspects, including the slippery issue of discounted cash flow to take in both inflation rates and tax risks.

Last year, Kent and his System/36 guided the property development business to a \$1 million profit — not bad for a company with only three people on its full time payroll. He says the computer system helps on at least two levels.

First, it prevents him from even start-

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Games for computers

By Helen Grant

ing subdivisions that would return losses or inadequate profits. Second, it creates 25 to 30 per cent higher profits in the projects he does start.

"I'm pleased I got the 36. IBM is concentrating so many resources on it. The system support program (operating system in micro terms) is truly fantastic. If you've never seen a 36 before in your life you can start using it just by pressing the Help button.

"I believe that any businessman who spends \$15,000 on an IBM PC AT is just ignorant. For a few thousand dollars more, he could have something like a second-hand System/34. People ought to think about that more because there are great deals to be had in that direction.

"In hindsight, if I had known what was going to happen with the mine, I would have opted for a second-hand 34 for say \$20,000. IBM will maintain it and it will support multiple screens and printers. So you can hook up cheap dumb terminals that act just like expensive PCs and stop worrying about what to do when your business expands," says Kent. ■

The Brisbane City Council is quietly gearing itself for the 1992 Olympic Games and at the centre of the activity is the Ericsson personal computer.

The Council is still not sure whether the games will be held in Brisbane but it is taking a "be prepared" approach. The Council's operations controller, Trevor Norris says; "In the Commonwealth Games we did only some of the personnel functions on computers. The scoreboards were all handled by outside contractors. We weren't in a position to do those types of things then, but we will be for the Olympic Games."

Ericsson Computers won a tender to

supply \$300,000 of personal computers in February this year. Others, that had gone after the contract included Sperry, IBM, Olivetti, Toshiba, Televideo, and Zenith.

Norris says the criteria for selection was price, performance, ergonomics, warranty and IBM compatibility, but the major influence in selecting Ericsson was the three year warranty.

"We saw them as being a company confident in their product. The computer industry has been associated with very short warranties which seems to be out of keeping with most electronic devices that one would buy. A 90 day warranty on something worth \$4000-\$7000 seems ridiculous in terms of buying a video recorder where they give you a four year warranty — and video

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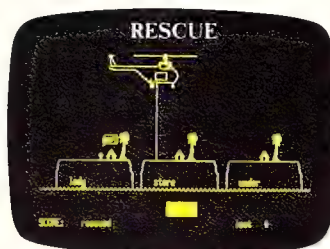
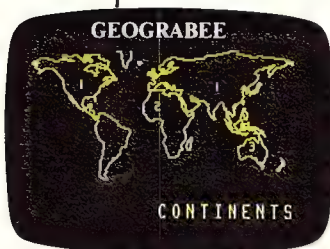
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recorders are far more likely to go wrong.

"When PCs came onto the market, rather than follow the general electronic warranties, they seemed to follow the computer warranty. We were pleased to see that Ericsson didn't do this," says Norris.

Brisbane City council sees itself as entrepreneurial in its computer purchases. "We were the first organisation in the world to use the 2960 ICL mainframe and the first organisation in Australia to use the Sperry front end processor — the DCP40, the Sperry cash-disk system and the Sperry 1100/73 mainframe. We were the first organisation in Queensland to use dry microfiche," says Norris.

The Council's huge database system now includes a Sperry 1100/73 for accounting — rates payroll, general ledger and regulated parking. It also handles interactive work for civil and electrical engineering and a VAX 11/750 is used for computer aided design drafting and an Integraph 11/785 for digital mapping.

Norris says the Council is committed to computers. "We have a lot of information that is required by a lot of people, in a lot of departments. Computers save duplication of information and makes the information readily available to whoever needs it."

The Council's latest aim is to progressively introduce 50 personal computers over the next year. The PCs will form part of the Council's local area network (LAN) so that staff, even in remote areas, can use computers to perform stand-alone functions and interface with the Council's databases.

Norris says the Council needs PCs to aid specialist areas and provide on-line services to its 20 regional centres. "We wanted PCs to make use of proprietary software, particularly in the engineering and spreadsheet type fields. At the moment, staff have to sit on the end of a long queue and wait for our programming and development staff to get around to do relatively small jobs for them."

Although the Council is continually developing its mainframe software, sometimes the mainframe cannot perform tasks required and turns to personal computer software. ■



Art comes to life

One of the applications that best exemplifies the unique capabilities of the Macintosh is *VideoWorks*. It is a comprehensive three-disk package from Hayden Software that includes *VideoWorks*, an animation application program with three tutorials and a special-effects demo; an *Art* disk, which provides predrawn modular figures for animation; and *Movies*, an anthology of fully-developed sample animation sequences.

VideoWorks effectively employs the Mac user interface of menus and

By Anthony Reveaux

**A new package
enables you to do just
about anything
in the animation field
on a Mac**

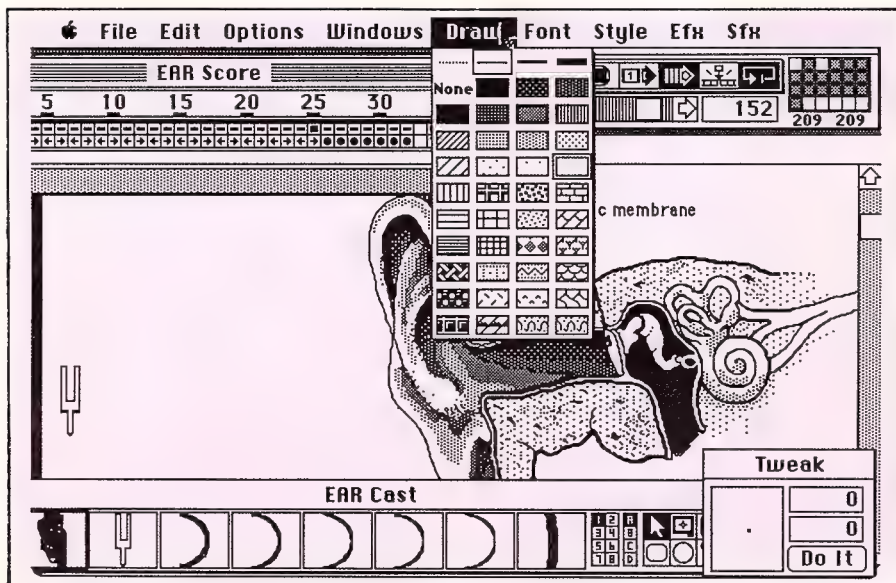
windows, controlled by mouse and/or keyboard commands. Animating has never been easier. *Video Works* operates

most effectively on the Macintosh 512K, but it has been honed down to work even on a single-drive 128K machine, a feat akin to a circus act in which a dozen clowns explode out of a tiny car.

VideoWorks can animate figures you've created within its own two graphics programs and can also import *MacPaint* documents from any source with ArtGrabber, its clip-board-type desk accessory. Artgrabber permits you to view quickly all the *MacPaint* documents in a disk, either in full-scale detail or in a miniaturized ShowPage window.



Frame by frame animation, depicted in the Cast. The storyboard across the bottom of the screen, shows King Kong on the prowl.



Technical and scientific demonstrations can benefit from the combination of sound and animation — here the tuning fork vibrations travel into the ear canal.

Artgrabber lets you bring these images into the *VideoWorks* program for animating. You can also use any commercially available digitiser to pull in images from the outside world.

VideoWorks can animate either in real time or in frame-by-frame increments. The icing on the cake is a complete menu of sound and musical effects to complement the visuals. The Mac's potential for animation has been correctly realised here as an esthetic of black-and-white linear precision, as opposed to Apple II graphics programs in which the details are coarser but

enhanced by color.

The well-written documentation includes background on the history of animation, and its step-by-step continuity helps clarify what is really a complex program. *VideoWorks*' creator, MacroMind, is the same group that gave us the popular *MusicWorks*, and the two programs share similar structures for graphic control of form and duration.

The *VideoWorks* screen opens up with a control panel at the top right, including toggles for starting and stopping, speed control, sound switch, light

switch for white or black background, and a grid showing the length of the sequence and how many channels are active. The speed control ranges from three to 60 frames per second, but the program is not time-base corrected, so the actual screen rate will vary, depending on the memory load of the active sequence.

At the bottom of the screen is the Cast, an eight-cell storyboard strip. As you create each animation element (called a Castmember in the manual), its image is automatically filed in a Cast cell. At the right end of the Cast is the row selector, with boxes that can call up eight more strips, for a total of 64 cells of Cast-members. Owners of 512K Macs see an additional bank selector that lets them access the 256 cells they have available. At the far end of the Cast is the Quick Draw Primitives cluster, a compact graphics kit. These are just two of the seven working windows available from the upper menu bar or through keyboard commands.

Cheap Paint is a MacPaint-type graphics program with most of the latter program's features, including text and a full fatbits option. To be fair, CheapPaint is a misnomer — perhaps it should have been called MiddleIncomePaint or UpwardlyMobilePaint. The QuickDraw primitives are cheaper, especially in terms of memory usage. You can draw basic shapes directly on the screen, filling them with patterns available from the Draw menu, to create animation elements. QuickDraw is especially effective for laying in backgrounds. From these two internal graphics sources alone, you can create enough shapes and forms to explore *VideoWorks*' vast sound stage of a program.

VideoWorks doesn't make you wait for instant animation gratification. In less than five minutes, you can be following that bouncing ball. From CheapPaint's palette you can create a circle on the active easel and see it automatically appear in miniature within the first cell of the Cast strip.

You have just created a "sprite". A sprite is an autonomous animation element, whether it is a dot, a duck, or a defender. With true Mac ease, you can make the CheapPaint window disappear by clicking on its Close box and then drag a copy of the sprite from its cell in the Cast and place it anywhere on the

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screen. When you release the mouse button, a grid of nine small squares appears over the sprite, indicating that it is an active element.

To create a real-time animation sequence, you click the Play button on the panel and then drag the circle around the screen with the mouse, bouncing it off the walls of the screen like a ball in a squash court, if you wish. You can issue a keyboard command that clears all working windows on the screen so you can see the sequence unimpeded. While the program is in the Play mode, the circle-sprite will continue to cycle through those motions you just gave it. From that moment on, you are a giver of life, an animator.

The Score is the editing bench and continuity chart for *Video Works*. It is a resizable window divided horizontally into channels, with the sound channel on top and animation channels from A to X below. Each channel, or row, shows the progress of one animation element, whether it is an active sprite or a static background. A simple code in the channel indicates the track of the element. Three toggles allow you to choose variations of the code for display, to trace the elements' identities and motions. The channels also have vertical divisions, representing the frame numbers, extending to more than a thousand frames for a sequence. The maximum number of frames in a sequence is 23,000 on a 512K Macintosh.

All animation elements occupy channels A to X in the order that you create them, and up to 24 different elements can share the screen at the same time. In the Score you can cut and paste movement passages with the ease of word processing, true "motion processing". The larger and more complex an element is, the slower it will move, and the longer it will take for patterns and textures to refill.

One of *Video Works*' most powerful features is the Playback function. Located at the bottom of the Score window, the Playback Head is a black square that runs along its own channel, called the Playback Bar, pacing the action when a sequence is playing or marking where you pause. When you use the mouse to point anywhere on the Playback Bar, the Playback Head pops up, whether the sequence is playing or at rest. Whatever elements occur at that frame in the sequence will appear on the

screen. You can drag the Playback Head to the right and to the left, and the elements will move forward and backward. If a sound track corresponds to that section, it will play as well.

Video Works' three tutorials give details of the advanced features of the program. Tutorial 1 shows you how to create a realistic sequence by making a frog leap and then, by cutting and pasting in the Score window, unleashing

Videoworks offers an unprecedented degree of expressive control

a herd of frogs jumping across the screen. Tutorial 2, along with the Efx Demo sequence, demonstrates how you can manipulate foreground and background priorities in several ways by using the Efx menu. Tutorial 3 shows you how to further modify a sequence by putting borders on the animated text blocks of a sales presentation.

What makes good animation so vital, vivid, and memorable? Not movement alone. Like us, animated objects should be subject to gravity, velocity, and inertia. Their character is revealed by the way they move. *Video Works* offers

an unprecedented degree of expressive control for "sculpting" life into computer animation. You can manipulate sprites in the real-time animation, either as finished movements or as tests for further development. If you want to do frame-by-frame animation, you can use the Tweak function or drag the sprites with the mouse, from position to position. All of these methods permit immediate playback of a movement to see how well it works, and, equally important, it is easy to make changes to shape the movement more precisely and expressively.

The nine squares, or attributes, that lie over an element when it is active are more than symbols. They are graphic identity coordinates that you can use as shape-modification toggles. By dragging corner and side squares, you can enlarge the sprite or stretch it in different directions. You can move your bouncing ball step by step and change its shape frame by frame, so that when it is in motion, it will seem to be reacting to flight like a real rubber ball. By enlarging and shrinking the ball frame by frame, you'll make it appear to come closer and then recede.

Some shaping modifications, such as trace edges, flipping, mirroring, or spray painting for shadows are unavailable within CheapPaint, but Art-

Animated business

Video Works has tremendous potential as a serious business tool. You can use the program to bring your business presentations to life by adding animation and sound effects to charts, graphs, diagrams, and text. Any image that can be stored as a *MacPaint* document can be animated with *Video Works*. It also has a special set of sound effects for use in adding fanfares to business animation.

Imagine how much more impact your presentation would have if the wedges of a pie chart came flying in from the sides of the screen and assembled themselves into a completed chart as you told a client the success story that the chart represented. Or bars could grow on a graph as you explained how sales had grown. For a grand

finale, the lines on a graph could zoom off the screen, accompanied by an explosion of dollar signs.

Video Works makes the production of lively, eye-catching presentations a snap, and an animated presentation will help make your message more memorable. *Video Works* adds an exciting new dimension to business software and gives the Macintosh a tool that is not available on any other system. ■

FACT FILE

Product: *VideoWorks*

Price: \$185 (approx)

Requirements: 128k or 512k Mac

Distributor: Imagineering, (02) 212 1411

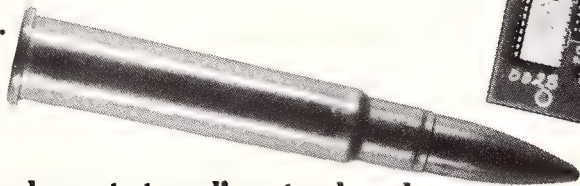
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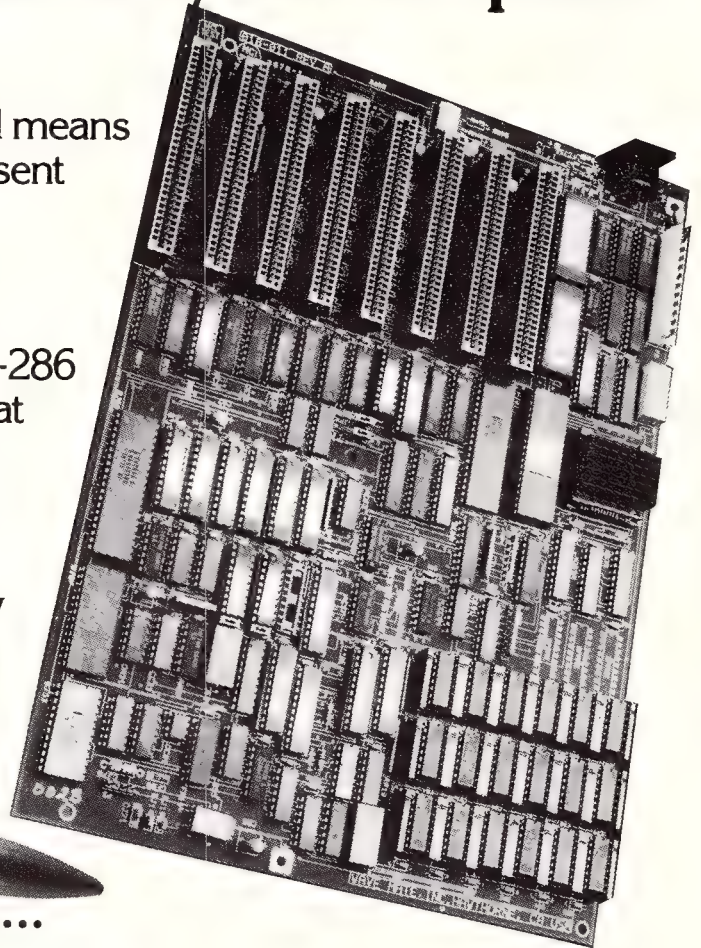
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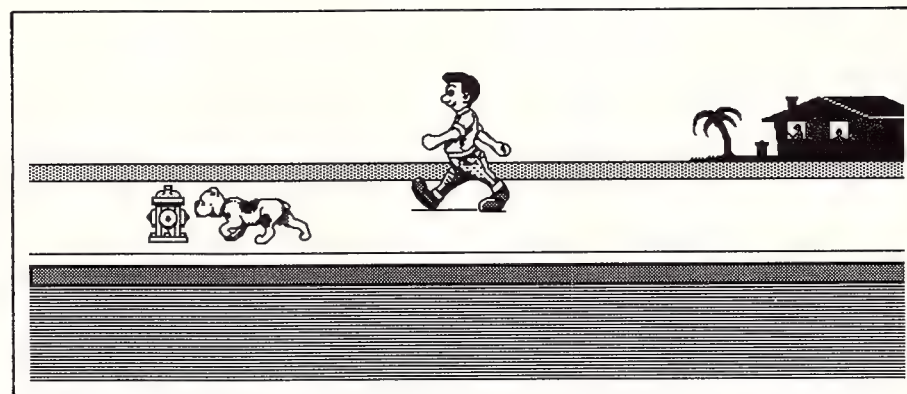
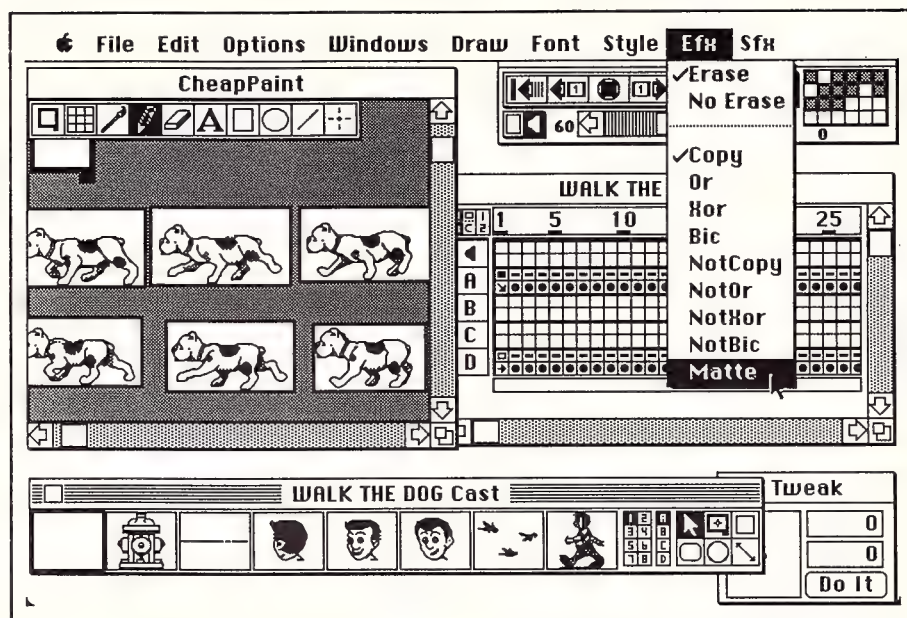
Grabber makes it easy to port the sprite or background to *MacPaint* and bring it back. If the *MacPaint* program is equipped with T/Maker Graphics' ClickArt Effects, full rotation, distorting, and perspective stretching will be available as well.

The *Art* disk in the package is not only good clip art, but also a thoughtfully designed aid for advanced animation techniques. Files include dancers, horses, backgrounds, robots, men and women walking, and even bugs — but then what computer program doesn't have bugs? The chart kit contains systems for constructing animated business charts, with arrows, x/y axis scales for graphs, divisible wedges for pie charts, and a three-dimensional-cube grid. The three "Cheez Biz" sequences in the *Movies* disk use these systems to demonstrate how animation can enhance business presentations.

The perspective file helps you create objects and backgrounds in depth. The "PerCar" movie, with its video-game action, uses the shadowed perspective building blocks to show you how convincing background-to-fore-ground movement can be simulated in simple ways. All the files in this disk include text that explains the most effective uses of the drawings.

You can animate your technical and scientific demonstrations with *VideoWorks*, as demonstrated by the "Ear" illustration of the *Movies* disk. When graphics are too complex to be drawn economically on the Macintosh, you can import any *MacPaint* image or create one with a digitiser. Thus, for instance, a map of the ancient world can have arrows moving across continents to dramatise migrations, and an electronic-circuit diagram can show currents flowing and gates opening and closing. For education, training, and sales needs, *VideoWorks* animation can replace costly film and videotape production in many instances. Because of its strong interactive structure, *VideoWorks* can even emulate applications on videodisc systems.

More than 82 different sound and musical effects are available in nine submenus, including alarms, bird-calls, helicopters, and Bach. The Mac's four-voice sound generator has never had such a workout! The sound effects are easy to record into the Score. You darken the part of the sound channel



Walk the dog shows travelling backgrounds professional animators use available from the Efx effects menu.

Top: Setting the scene. Above: A finished frame.

above the frames you want the effect to accompany, by clicking and dragging, and then pull down the Sfx menu. Click on any title, and its code will be automatically pasted into the sound channel. While the sound channel is darkened, you can sample *VideoWorks*' entire sonic repertoire by selecting effects from the menus and then listening as the Play mode repeats, or use the Playback Head to "strum", or activate, them.

Some spot effects, such as footsteps, drumbeats, and whistles, are only a few frames long. Others, such as the forest fire or the electronic drone, are continuous. The musical effects' duration depends on the lengths of their phrases.

Although the menus do not identify

them as such, several effects are "synergistic". They are interlocked with the movement of elements on the screen, and the pitch or key of the sound will rise and fall, and the tempo will slow and quicken in pace with the action.

The program lacks a fade-in/fade-out function, and it does not let you mix or overlay the sounds, but in minutes you can experience your own sprite whooshing, twittering, exploding, and breakdancing.

VideoWorks' *Movies* disk will whet your appetite for more. Not only do these 19 sequences demonstrate the variety of animation movements, styles, and strategies that *VideoWorks* is capable of, but they can also become advanced tutorials. ■

Checking your drives

By Stewart Fist

Modern disk drives for home computers are remarkably reliable, considering the task they are called upon to do. Over a year they may be called upon tens of thousands of times to spin quickly up to an exactly correct speed, and then to read or write billions of bits of binary information on to flat pancakes of coated plastic.

Modern disk drives are also very forgiving. They are often called upon to deal with disks that are warped, worn, covered in dust, dampened by the odd coffee spill, dried in the sun, and sometimes scratched.

Disk and disk drive problems are still a rarity around our office, despite the way both the drives and the disks themselves are treated. But on the odd occasion when something does go wrong, the problems can be a nightmare. I must admit that, along with a few million other computer users, I don't back up disks regularly — except for the first week or two after some office disaster.

This is why it pays to invest a few dollars to have on hand a disk drive analyser for those rare and frustrating occasions when you suspect that the drives aren't functioning correctly. It is only one of the tools, but a valuable one.

Verbatim's Datalife Analyzer for the Apple II and III series comes in a solid plastic book-sized folder for storage on the bookshelf along with the manuals and other de-bugging essentials. Inside is the disk and a simple card that gives operating instructions.

It performs four tests on the drive: a radial alignment test, a speed test, a disk-clamping test, and a read/write test.

The radial alignment test checks that the read/write heads are centred over the correct track locations on the disk — there are 35 of these, and the heads must be positioned accurately over each one.

This test doesn't check head "alignment" in the conventional sense of the word — "alignment" in audio and video means that the head gap is at the right

An analyser disk can help you trace the cause of malfunctions

angle to the track; this checks only that the head is centred on the track so that it doesn't try to read information from adjacent tracks.

Adjustment of the "radial alignment" is relatively simple if you have a manual and a modicum of common sense, but if you don't want to risk it yourself most retail service departments will do it for you. But before you send the drive off to the repair shop you must transfer the data from any disks that may have been recorded with the incorrect alignment.

A drive that is not centring in the standard positions will quite accurately read back any data it has previously written (the head during reading is automatically "aligned" over its own written track) but it will have trouble with off-the-shelf disks, or those recorded by another computer or another drive. If necessary, borrow a second drive that has passed the alignment check and copy over anything of importance first.

The second test on the Verbatim disk is the speed test. The speed of a disk drive is generally not critical, within certain limits — but when you back up software, it can be.

The test on this disk is pretty basic. It simply checks to see whether the disk is spinning at a speed within the normal range. It doesn't give you any visual information on the fluctuations in the speed, or allow you the opportunity to make speed corrections to the drive during the test.

Apple Disk II drives have a very simple speed controller that can easily be adjusted by a screwdriver — as long as you can see the effect of your adjustment with some kind of screen graphic. Locksmith (the pirate's passion) has an

excellent utility that presents the speed as a growing chain of line-bars on the screen while the disk is running, allowing you to quickly and easily make any adjustments and also check on speed fluctuations. With the Verbatim module all you get is a good, fair or poor notice.

The third test is a disk clamping test. In the Dark Ages (a couple of years ago) we used to have a lot of problems with disk clamping. Disks are quite thin, and the centre hole or hub often wasn't reinforced as it is on most disks today. It wore fairly easily, and it was easy for the clamps to lose their grip. Obviously the drive shaft must hold the disk without slippage and keep it accurately on centre.

This test takes about 30 seconds, so presumably the program is writing a byte of information onto the disk then reading it back after numerous head passes to see if it has changed in position relative to the shaft. You get a good, fair or poor reading for clamping ability.

The fourth test is the write/read test. This module simply generates two sets of identical data and writes one of them to the disk. It then reads the information back from the disk and compares it with the record stored in memory. If both are the same, the drive is given a pass; if they are not, it fails.

The disk also includes an autotest option, which automatically performs all four tests above, but without the bells and whistles. It is quick and convenient, but it lacks the graphics. When you run the four tests individually, you are presented with excellent animated graphics showing how the disk drives operate, and how the tests are being performed. There's nothing like a bit of showmanship to liven up a mundane operation. ■

FACT FILE

Product: Disk Drive Analyzer

Price: \$47.60

Requirements: Any Apple II disk drive

Documentation: Adequate

Supplier: Verbatim Australia,
(02) 929 8811.

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Graham Couch: Sally's days were numbered when he arrived as Flag Inn's group general manager.



GREG BARTLEY

The re-birth of Sally

Sally had given good service, bedding down many businessmen in her time but the end was in sight.

With the arrival at the Flag Inns co-operative of a new group general manager, Graham Couch, Sally's days as the computerised reservation service were numbered.

Within 15 months, Couch had installed Super Sally II, one of the world's fastest 24 hour reservation systems.

Couch is a versatile fellow. At 42 he's

By Tony Thomas

**In 15 months
a 24 hour computerised
reservations system
was installed
to handle world-wide
bookings**

an accountant and has been a real estate agent, a commercial arbitrator and for ten years was a top man in the Victorian building industry as general manager of Spaceline Homes.

He took on his job at Flag in January 1983 and the task of sorting out the reservation service would wring him out.

Flag Inns computerised reservation service for 400 motel members ran through a computer bureau whose eight-year old product had become

obsolete. With the bureau contract due to expire in May 1984, Flag either had to have a complete new in-house and on-line system operational by that date, or be forced to trigger a three year standard renewal clause.

Couch knew full well that on a software and hardware replacement exercise of this magnitude, over-runs of up to six months were the norm. Moreover, the preliminary work on a replacement system had already been a bit of a fiasco — Couch found a stack of documentation and consultants' reports for the new software which had somehow failed to include any performance-based criteria or formal design specification.

And he did not like the look of the proposed new hardware configuration either.

This tale has a happy ending as the new 24-hour system cut over just two days ahead of deadline — not quite perfect (some minor bugs had to be ironed out later) but saving the day for Flag Inns.

Couch has continued to exercise his mania for state-of-the-art systems and at the moment is bringing on-stream an upgrade based on the Austpac packet-switching network. This will enable motels, booking offices and travel agents from Port Hedland to Auckland to organise, confirm and financially process a motel booking within eight seconds of hitting the Send button on the remote terminal.

He finds skills learned in the building-game invaluable in running a motel system. "It's amazing how many builders and accountants finish up in motels", he says. "Half of our board are ex-accountants or builders. Owners turn over about four-yearly because of the pressure and strain of running a motel. No-one should ever imagine that he can both retire and run a motel."

One of his challenges has been to convince moteliers of the value of Flag continuing to invest in state-of-the-art systems. "Initial reactions by the board were to say, 'What an expense! What will our members say!'", but now they see so much benefit they don't quibble," he says,

Each member is funding the computer software development at the rate of \$50 per quarter. The capital cost of the in-house system was \$1.5 million and the use of Austpac will cost the

central Flag operation \$100,000 in development expenses.

Flag's Melbourne headquarters used to be rented but in late 1983 Couch bought an old building in South Melbourne, mainly to house the new million dollar computer system. He persuaded the board that once any big computer was installed in rented premises, the landlords would have Flag over a barrel on rents.

With the computer bureau, it had been impossible to ensure a 24-hour operation, with a gap overnight because of staffing shortages. Staff now work

One of the challenges has been to convince moteliers of the value of investing in state-of-the-art systems

three shifts, 11 pm to 7 am; 7 am to 3 pm and 3 pm to 11 pm.

The initial complement of Flag staff were reluctant about continuous shift-work but turnover in the past 12 months has created a new profile of workers. They are mostly more settled, mature and married people rather than youngsters, and appreciate the chance for part-time work and work with penalty rates. Couch also has three full-time staff who do nothing but train motel members in using the computer system and he has produced a training video.

"We run 24 hours a day and anyone in Australasia can book a Flag room just by using an 008 number to here (Melbourne). The advantage of anyone phoning in to us rather than phoning a distant motel, apart from the advantage of a 20 cents call, is that if we can't book the first-choice hotel, we keep going until we've found another suitable one. Flag members have to have 75 per cent of their rooms available centrally at all times," he says.

The central booking room has seven IBM PCs, programmed to ensure all data is correctly entered to the mainframe. The London office is on-line to the mainframe and shortly the Tokyo, Los Angeles and Singapore offices will go on-line, using the Midas system of the Overseas Telecommunications Commission.

The reservation and accounting software has to cope with the complexities of motels ranging in size from seven units to 420 units, with a huge variety of tariffs and discounts and surcharges.

The new IBM equipment has been remarkable with a downtime attributable to the hardware of only about 90 minutes in 18 months.

The software was written by a firm in Sydney called Johnston Brown and Associates and Couch says their performance was admirable.

"We are planning to get seven years joy out of it all. Our mainframe capacity could readily be upgraded to four times its present size," he says.

The usage is fairly low — about 8000 transactions per day. There is particularly fast growth of business from New Zealand where motels in the chain tend to have all their rooms on the Flag system and are happy to make free marginal use of the leased Tasman line.

The present dial-up involves about 21 seconds for dial-up and response time, but many members and customers are not prepared to wait this long. "So we have moved rapidly to develop a system via the Austpac network, scheduled to go on-line on September 30. The system gives effectively an instant connection to the mainframe, and an eight second response time, whether from Port Hedland in Western Australia or Port Arthur in Tasmania.

For the Austpac upgrade, the Hero keyboard VDU and printer costs from \$2900 per motel. It can be upgraded to provide front and back office functions as well.

Members will get rapid payback on their investment. The Flag president, Clarrie Smith, for example, with all his motel's 73 rooms in the system, will save \$5000 a year compared with using the STD line.

The Hero computer systems (a specialty in the hotel-motel industry) are the tail wagging the dog for Flag Inns. All Flag motels originally had a Hero dumb-terminal and hence all new Flag systems have to be compatible with those terminals, which Couch says are very effective little devices.

"All our communications software is done out of Brisbane, by the software firm, Batstone Henry and Assts, which has also done a lot of work for Australian banks, government departments and Telecom," Couch says.

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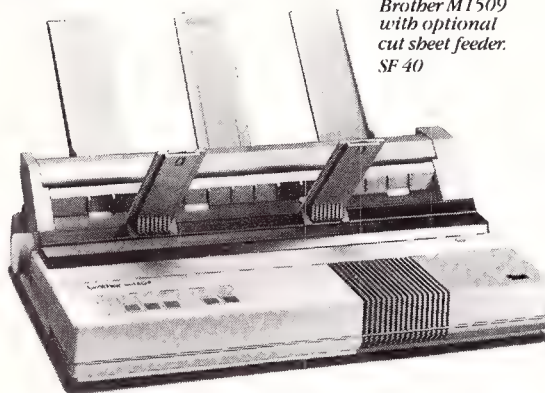
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CSO 4360 B

ACCOUNTING

Flag was created 25 years ago when six moteliors led by Angus Taylor at West Wyalong moved to bring motels closer together with referrals and mutual bookings. At that time the supply of rooms was tight and the inter-connection was more important for efficiency than market share. But now it's a marketing tool for Flag's 450 motel members.

"We have more rooms in Australasia than the Sheratons and Hiltons — Flag has 19 per cent of the country's motel rooms," Couch says.

Flag is non-profit and definitely not a franchise. "At Flag we've taken the decision that we should not dictate to members how to charge, so their till is their own affair. All we require is that prices be held for the four-month life of our pricing directories. Sometimes we rather wish we did have more say in pricing, because we could generate some marvellous marketing plays."

Members pay a subscription fee and commission on lettings attributable to the Flag central systems. Commission

totalled about \$51 million last year, based on members turnover of \$420 million. Couch estimates that indirect business generated from co-op advertising and other spin-offs will be worth another \$100 million of the turnover by members

Marketing is Couch's other great strength. For example, about 8000 companies in Australasia have now agreed to exclusive use of Flag Inns, generating \$10 million revenue a year.

Flag is rapidly tying itself alongside the fly-drive, coach program and group travel schemes that are now a major part of the motel game. For example, 'Super Sally' on-line computers have been installed in the touring divisions of the Royal Auto clubs of Victoria and South Australia.

Recently Flag went into Telecom's Viatel which Couch describes as a great generator of business.

"We also have people throughout the world selling tour vouchers for us, through about 120 wholesale operators like Jetset and Jetabout. Only 11 per

cent of the business that we generate for members comes from overseas — \$6 million this year. But the growth has been unbelievable, up by 54 per cent last year, mainly from the US," he says.

"On June 1 last year, we launched another first, a centralised commission facility, 'Flagtag' for travel agents. We give each of the 1300 agents on the network a code number and they use it to phone a booking into here. At month-end all the agents' 10 per cent commissions are paid in a lump sum cheque. That sure beats the old system where the agents had to bill the motel, usually having to write two letters for each booking, then waiting for their money."

The 'Flagtag' cheques have been as high as \$4000 a month for some big agents and it has more than doubled the business from agents in 12 months.

Flag now has its own credit card system — called the Inn Club — for companies with 40,000 cardholders. Couch predicts revenue from the card system will double in the next two years.

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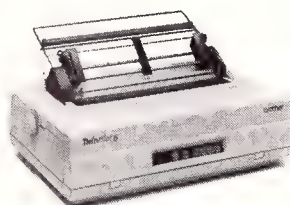
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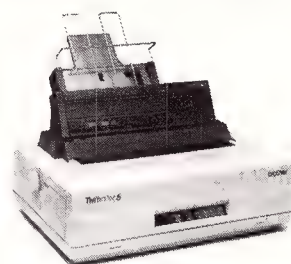
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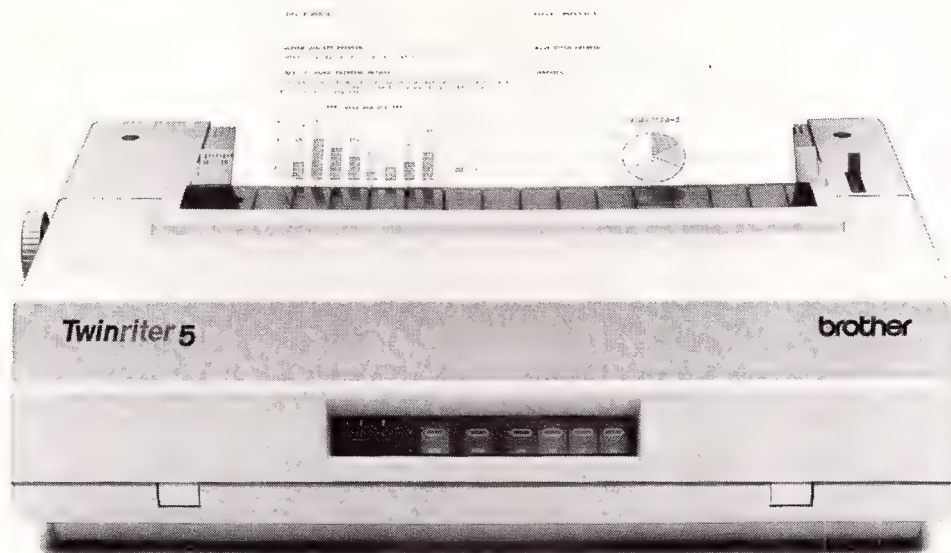


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Down but far from out

It's no fun starting a new business selling mini computers and having your supplier go broke after nine months. That was the inauspicious start in 1977 for the two owners of Integrity Software, which now sells accounting software for micros to nearly 12,000 customers.

Buyers have taken about 25,000 modules, mainly of the *Ascent* series, and currently half of sales revenue is generated from exports. With turnover of \$2.5 million last financial year and a projected \$4 million this year, Integrity plans to list on the stock exchanges in about two years.

Integrity got a further boost recently by winning the first Industrial Design Council award for software.

Speaking about that initial catastrophe; managing director Brian Gardiner, 47, says, "We started off on our own with \$14,000 capital, just enough to pay the rent, get a little switchboard, and lease a micro, a desk and a Cafe-Bar. Then we went out writing software

By Tony Thomas

On their backs for a month they decided it was time to get back into the fight

on contract and also selling minis and software for the Sydney company.

"Luckily there was common-sense all round, with everyone agreeing to take a share of the losses. We lost all our unpaid commissions on sales, and some customers lost their deposits, but they got their programs for no further charge.

"The loss of all that commission income put us flat on our backs for a month. Then we decided it was time to get back into the fight. We looked around and targeted on the micro sales market. I think we're the oldest micro software house in Australia still surviving."

Gardiner says the future emphasis will have to be on exports which already generate half of Integrity's revenue. "The cost of development is so high it has to be amortised in big markets; ventures aren't viable unless with sales in the thousands. We will probably sell more than 3000 units of *Accounting One* in Australia, but we would see a market overseas of maybe 30,000 units, with the marginal cost only \$20 or \$30 a unit.

"Our learning curve on exporting has been horrific. Once, overseas distributors would accept manuals in a three-ring binder, for example. Now, the packing and printing costs are almost as much as the software. Normally you have to bend the product for each market overseas, but our other series, *Horizon*, has all the components built in, so it doesn't need modifications.

"Our specialty is small business software to do historical accounting, for receivables, payables, and general ledger," says Gardiner. An increasing number of accounting firms are using it. One product in the *Ascent* series is called *Cashbook* (\$850). An accountant

can talk the client into buying a small Kaypro or Osborne micro to capture their transactions. The disk is put into the accountant's general ledger and gets out the balance sheet and profit and loss statement.

"Since we introduced it 18 months ago, it's been our fastest mover."

Gardiner says there are extensive standards to which Integrity's programmers must conform.

He says it is hard to do market research before launching the product.

"It's like a book — you have to read it sequentially before you realise how it all adds up, and with software you have to put something out on the market and follow the trail it creates and know which trails are definitely closed off.

"This is a difficult business, because the lead time for a new product is six to 12 months yet the market window may only be open for nine months. Some of the things we create are not really as user-friendly as we would like; we just have to know that it's better than anyone else's at the moment and that the window is open."

Gardiner and co-owner Cesare Tizi, the technical director, began by selling Micro-File computers — a nifty job with 48K RAM and one megabyte on disks — which Gardiner says was years ahead of its time. But they found they could make more money selling software.

Tizi did an electrical engineering degree at Caulfield Institute and could not get a job in engineering but found one in programming, which took him to Olivetti. "He was the best programmer I knew of in Olivetti," says Gardiner, a radio mechanic in the Australian army in Malaya from 1957-59 during the emergency.

"We used to do calculations on multiplying machines. Then I joined the PMG for nine months but the mentality there didn't suit me. About 1962 I joined General Electric and got into the computer area. They were selling their '225' machines to companies like Carlton & United Breweries, ANZ and BP. The machines would fill a big room and they

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ACCOUNTING

cost about 250,000 pounds. They had about the capacity of an IBM PC XT."

Gardiner went on to nine years as engineering manager of Control Data and two years with Olivetti as a senior salesman.

Gardiner and Tizi have reserved 20 per cent of Integrity's stock for the staff over the next three years. "Staff currently hold about five per cent and can only raise their holding gradually to ensure enough free equity is left for new staff," says Gardiner. "We plan to grow 100 per cent a year. We're in our ninth year and we've grown about 65 per cent a year compound so far. For example, we'll be adding another 20 people to our 50 staff in the next few months.

"On finance we've borrowed mainly from the Victorian Economic Development Corporation, at about 14.25 per cent, and they're a most understanding lender. We also have an unbelievably good rapport with the National Australia bank which has bent over backwards for us. With those two financiers, we've been very comfortable." ■

A happy guinea pig

Most businesses would run a mile to avoid becoming guinea pigs for someone wanting to write a new software program.

But Mobil Essendon oil distributor, Garry Langford, is still quite tickled that his business was the first customer nine years ago for Integrity Software's package for oil agents.

"Honestly, I got very few bugs," he says. "And I got a lot of advantages. The software was written to suit my particular needs, rather than me having to adapt to stuff written for someone else."

The package has now been adopted by scores of oil dealers. They get special features, like a facility to increase all prices of lubricants and oils by a certain percentage simultaneously, which is

what happens after government petrol pricing authorities deliver a ruling.

Mobil's Langford met Integrity's Brian Gardiner when Gardiner was giving a spiel for Olivetti at a Gold Coast convention for Mobil dealers. The dealers were a frustrated lot because Mobil had organised a system for them to have terminals to talk to the Mobil mainframe.

But the system naturally made Mobil's needs paramount over those of the dealers and Gardiner saw the scope to go out and write them a good package.

These days the software has the versatility to do jobs ranging from keeping track of gas cylinder hires, to enabling the micro to act as business cash register. ■

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ASA 'goes for it' on EDP

The Australian Society of Accountants continues to set a cracking pace in its information technology sector. It has joined a 12-month venture with the Federal Department of Industry, Technology and Commerce, with each side putting in \$30,000, to promote awareness of information technology among accountants and small business people. The ASA fought off various other groups wanting to be co-venturers with the department, and there is a neat one-to-one structure to minimise the bureaucratic aspect.

The ASA got the nod because of its early and strong start in information technology education — it was seen as being about three years further advanced than other contenders.

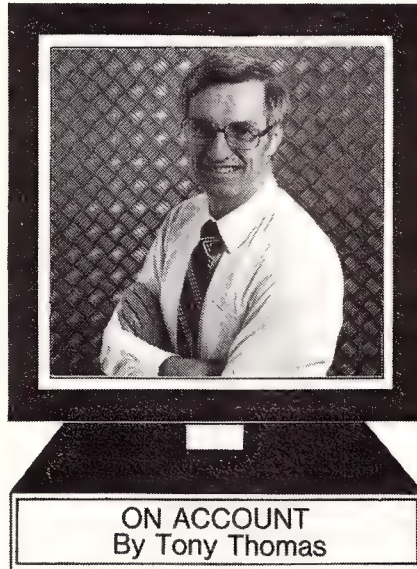
The venture is a high-tech one. The ASA's Videotex information technology directory (an interactive one in which members can get on-line diagnostic and help services) is likely to be upgraded and will become the conduit for new services including electronic mail and ordering.

The most exciting aspect is that accountants' clients may well plug in to the system, and electronic mail will then flow between accountants and their clients, not to mention between one accountant and another. Goodbye, Australia Post.

That's not all. The directory system will go international, linking for the first time ASA people in Britain, the US, Singapore and Hong Kong. This link is being rushed through so it will be ready for the ASA's information technology forum in Singapore next April.

The department will add to the service a lot of extra information such as Australian software producers' directories, hardware information, and venture capital seekers and start-ups. Talks are taking place between the ASA and all state governments about further possible hookups. The larger deal is being registered as the Accountants Information Management Service.

The electronic mail will pave the way for the Australian business community to access on-line expert systems to help



in complex decision making. Expert systems incorporate both a knowledge bank and rules of procedure, so that when you feed in a specific problem, it will churn out decision options.

The best example of expert systems in use is in medical diagnosis from symptoms. But patients can be brought to hospitals, whereas business people will have to be on line. The cost of this expert system extension would be formidable, perhaps half a million dollars, but it is being given high priority and could be on line late next year.

The information management service will also cover the ASA's video library, bringing text versions on line.

Sing a song of Singapore

ASA's first information technology forum in Singapore from April 13 to 16 next year is growing into a conglomerate. The registration ceiling is to be 1500. Already the forum is packaged alongside CommunicAsia 86 (a two-yearly event) and InfotecAsia, which is such a big deal that one Japanese supplier, NEC, is bringing 46 people and investing about \$1.3 million in its exhibition.

Now the WA Society of Accountants'

public accountants convention has become part of the package, and will run in Singapore from April 17-19. The forum will cost members about \$1500 as a package deal covering air fares, rooms at the Shangri-La Hotel (rated fourth in the world by *Institutional Investor*), registration, lunches, a grand banquet, and the odd cocktail. The ASA is likely to block book aircraft rather than charter, because chartering poses backloading problems and the regular airlines can offer cheap add-on flights to other destinations and resorts.

With a typewriter on my knee...

The latest developments in voice-actuated typewriters in the US are surpassing all expectations. The usual view is that the English language is too difficult for machines to print it out from a person's speech. But Harvard Business School's professor Warren McFarlan, addressing Melbourne executives recently, said machines were on the way to making typists obsolete within a few years, especially through artificial intelligence systems that can learn to interpret each speaker's unique style.

McFarlan said he spent an afternoon in the laboratories of a high-tech firm in Cambridge (US) which has a product to be marketed in mid-1986 that gives 98 per cent accuracy with a regular and clear form of speech, putting the text on screen first and then printing it out. That is comparable with his present secretary's accuracy, he says, but the machines will soon exceed that.

Starting with a 10,000 word vocabulary, they will modify it during the first 24 hours' use to give an accuracy of 99.6 per cent. This variety will also be marketed in 1986. Three rival firms are working up to a four-terminal version for simultaneous users, to cost \$US20,000 and be on the market two years from now. ■

Machine reader overcomes word processing problems

Ernst & Whinney in Melbourne had a problem. It decided to switch from Lanier to Wang word processing — two incompatible systems — and faced the prospect of having to key about 3000 pages of type-script into the Wang. The solution: it printed out the Lanier documents, and for \$1500 a month hired a Dest machine reader from Remington to read and input the documents electronically into the Wang system.

Remington has sold about 80 of the optical character recognition (OCR) devices to large solicitors, accountants and government departments. At \$20,000 to \$35,000 they are not cheap. The price varies according to how many typewriter type fonts you want it to read.

So how well did it work for Ernst & Whinney? "I'd give it seven marks out of 10," says the firm's office services manager, Tim Sylvan. "It probably reduced the job's workload by 80 per cent."

In another application, a 120-page Ernst & Whinney document somehow disappeared from the Wang system. There was a hard copy and the Dest machine allowed easy recovery. Certain "foreigner" documents can be automatically entered and easily manipulated, he says.

The not-so-good points are:

- ☐ It cannot cope with a type font other than those specified.
- ☐ Any oddity in the document, such as a double-underlining, a pen mark or a printing or ribbon fault on the original, can cause Dest to reject the whole page. The oddities must then be whited out by hand.
- ☐ It does not seem to like handling columns of figures.
- ☐ It reads a maximum width of A4 paper — an A4 sheet printed sideways will be rejected.
- ☐ The paper feed sometimes sticks — not for mechanical reasons but because of readability problems.
- ☐ Apart from special jobs such as the

By Tony Thomas

Lanier-Wang conversion, Ernst & Whinney has not found much use for it, especially as the need for it is by-passed by people exchanging Wang disks.

☐ Generally, it needs a bit too much "minding".

Garry Scarborough, the national sales manager of the Dest supplier, NBI Office Automation Systems, says Dest can now read more than 95 per cent of common office type fonts. Quite a few accountants use Dest to compensate for not having enough word-processor screens (Dest allows them to use typewriters as word-processors). Others have two incompatible word-processing systems in their office and Dest links the two.

He says he can't be categorical about how well Dest reads pages of figures, and a prospective customer ought to put it through his own test. Numbers from a daisy-wheel printer should be fine, but dot-matrix numbers might be difficult.

One of the heaviest users of a Dest in Australia is Janette Cates, the manager of Dependable Data, a word processing agency, consultant and bureau. She leased one a year ago and has put through about 75,000 pages, including hiring out the machine by the day or half-day to companies wanting to do it themselves, perhaps for reasons of confidentiality.

Government departments and royal commissions are also regular users, and she says she can get their typed documents read straight on to almost any disk they want — NBI, Wordplex Digital and, shortly, IBM PC.

"Provided the typed material is of good quality, the error rate is only one out of 300,000 characters. A really important advantage is that you escape the repetition strain injuries that could arise from heavy typing work. For

example, some companies will hire the machine and put through 2000 pages in 24 hours. Imagine the task if those pages were keyed in by typists instead."

Cates's bureau can heavily cut the cost per page of entering material into a word processor. Her rate is \$1.50 a page for the first 200 pages (key-entry would be about \$4.50 a page), \$1 a page for 200-1000 pages, and down to 50 cents a page for multiples of 1000 pages. The hire rate is \$500 a day.

"It is by far the best little system I have seen — one that I can put in the boot of my car," she says. "It can work from colored paper, photocopies and even photocopies of photocopies."

"Another problem might be that a worn print wheel has created a little gap on the tail of every 'g', and the Dest will have to flag all the 'g's. You also have to do a bit of touching up on heavy statistical work. It's not the be-all and end-all, but it certainly beats the competition."

Cates says the Dest is particularly good on IBM hardware. It was designed for IBM compatibility with compatibility with other systems as spin-offs.

Andrew Johnson, manager of the information consulting division of Arthur Andersen, says the problem with Dest is the high price and low throughput per hour. The ideal user would therefore have a constant flow of documents without peak loads. Too much overloads the machine, too few means there is not a good return.

But the technology is now far better, he says. Previous machines were intolerant about many variables, but the latest will digest all sorts of copy.

One of the best uses is where a firm or company has a large number of typewriters and a stand-alone or small word processing system. The cost to install distributed word processing to every typist would be high, but a single Dest machine can feed off the output of all the typists and get them on to word processor disks, Johnson says. ■



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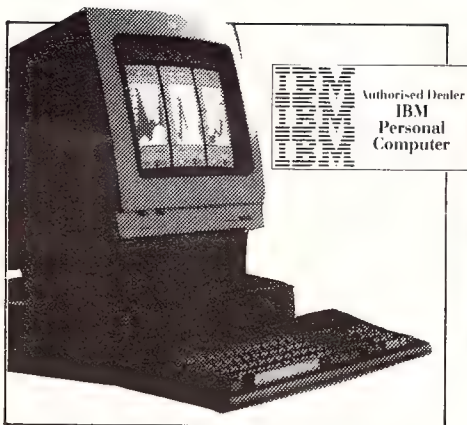
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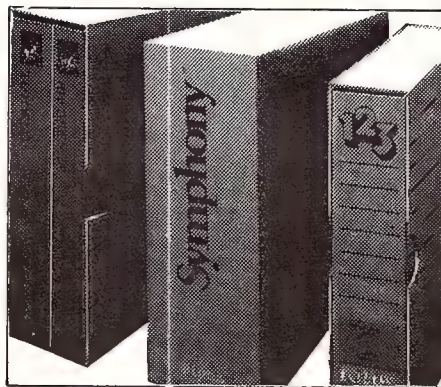
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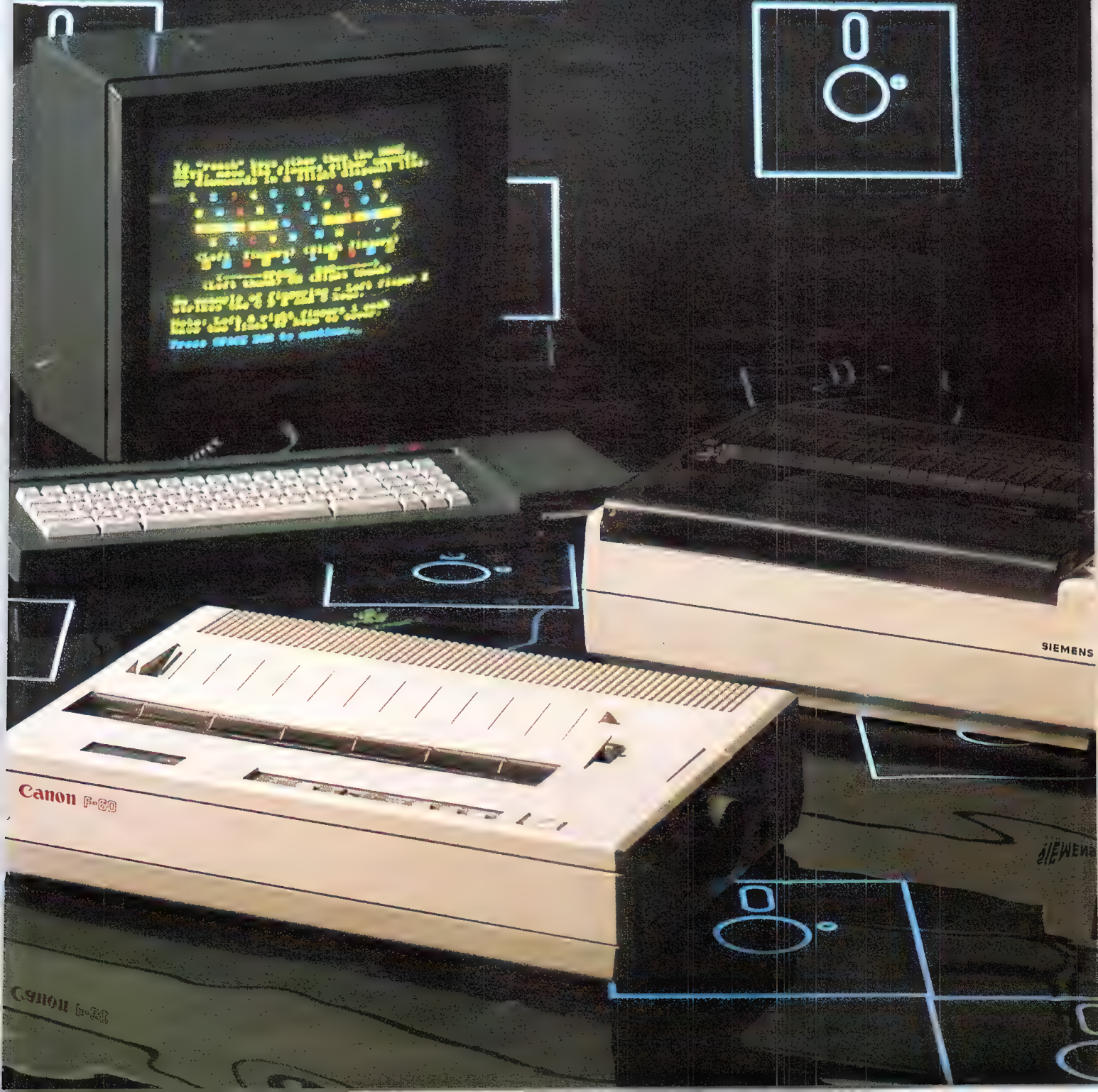
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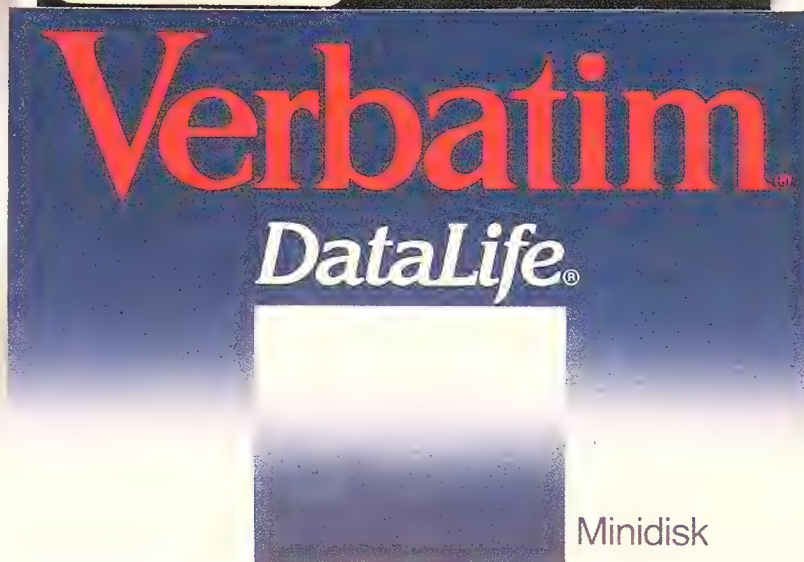
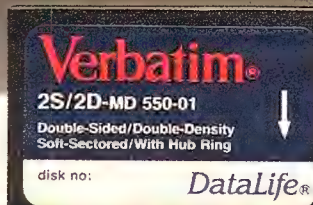
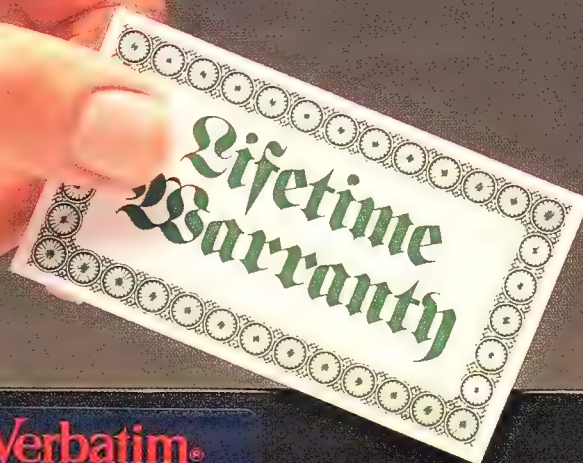
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Silent Canon

Canon F-60 Thermal Printer

Japan, in its efforts to make a printer that could reproduce the Kanji characters — calligraphy — ended up with almost complete domination of the dot-matrix market.

However, letters produced on a dot-matrix printer are not fashionable and so the Japanese began to investigate other forms of printing . . . something that would produce print of equal quality to a daisy wheel while retaining the versatility of a dot-matrix printer.

One solution is the laser printer — a marriage of modern computer technology and the photo-copier. But laser printers are expensive and not everyone wants to pay more than \$3500 for the privilege of being able to produce letter quality italic text.

Another answer is the thermal printer. Once used almost exclusively by calculators and pocket computers, the thermal printer is making something of a come-back because of the numerous advantages it offers. To begin with, it is theoretically capable of producing graphics, which means by extension, it can also produce a variety of typefaces. Its other advantage is that it is quiet.

A good example of what has been happening on this front is the Canon F-60 thermal printer.

This \$895 printer will quietly churn out page after page of letter quality text without making enough noise to disturb

a sleeping cat. Gone is the clatter-clatter-clatter of the traditional daisy-wheel printer relentlessly hammering away as another letter is stamped onto the page.

Instead the Canon offers a choice of operational modes — you can use thermal paper or you can use a special ribbon which, when heated up by the elements in the print-head — transfers its ink onto the page.

FACT FILE

Product: Canon F-60
Price: \$895
Print method: Thermal exchange
Speed: 10/15 chars per second.
Parallel Interface: Yes
Serial Interface: No
Print Buffer: Approx 3 lines.
Tractor Feed: \$65
Cut sheet Feeder: \$200

The results are excellent — what you'd expect from an electric typewriter or a daisy-wheel printer. It produced a test page of single spaced copy in a minute and thirty-five seconds, which works out at more than 25 characters per second.

In its highest quality print mode, speed of course comes down. The same page in letter quality print mode took three minutes 54 seconds — a rate of 10.3 characters per second.

But the quality is excellent — far better than anything that could be produced by a dot matrix and equal to anything that might have come from a daisy-wheel.

The Canon has another advantage over the traditional daisy-wheel.

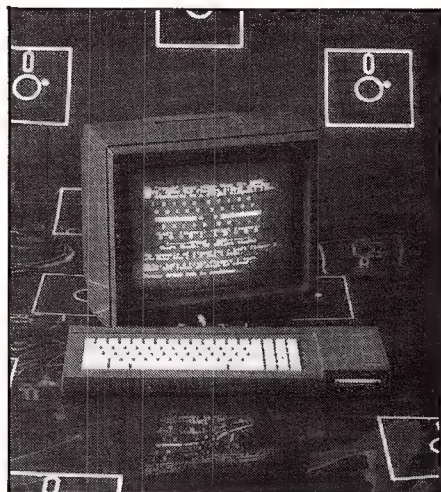
Once your software has been suitably configured for this machine, you can do almost anything you can do with a dot matrix printer — change from normal to expanded, compressed or expanded-compressed type-face, and print with super-scripts and sub-scripts. The Canon even offers a range of different fonts in plug-in cartridges which give the machine a wide range of typefaces. Those available include Courier 10 and 12 point, Courier Italic, Pica and the very formal looking Gothic.

We ran all our tests using the Canon's thermal ink ribbon. Good for about 500 pages, the ribbon must be changed when used up — just like the plastic

ribbons used on electric typewriters for a razor sharp image.

Though not supplied with the printer, the Canon F-60 is available with a tractor feed (an extra \$60) and a cut-sheet feeder (\$200). For those looking for a quiet, high quality printer at a modest price, we think this unusual Canon is worth an audition. ■

— Gary Ross



Machine for small business

Amstrad CPC6128

In these hard economic times, small businesses may be reluctant to pay \$4000 or more for a personal computer.

But a new machine from Britain could induce a change of heart.

It's the Amstrad CPC6128 computer, which has a Z80A chip and will run CP/M software at the same speeds as a traditional CP/M computer, such as the Osborne Executive and the Morrow MD11.

The Amstrad is of unusual design. The monitor — you have a choice of color or green — contains the two power lines needed to run the computer which lives inside the keyboard. The green screen which we saw was good and crisp, but the color monitor supplied looked as though the rasters were out of alignment.

It definitely was not as good as the Amstrad color monitor we saw last year

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BENCHTESTS

FACT FILE

Product: Amstrad CPC6128
Price: About \$800 with green screen. \$1000 with color screen.
Hardware
CPU: Z80A
Speed: 4.0 MHz
Memory: 128K
Disks: 1 3" 171K double-sided floppy.
Display: 25 lines by 25, 40 to 80 columns.
I/O: PCB edge connector, Centronics, RS232C.
Software:
System: CP/M 3.0, CP/M 2.2, AMSDOS
Language: Basic, Logo
Documentation: Excellent
Skill level: Novice or enthusiast
Use: Small business, home.
Supplier: AWA-Thorn.

and which greatly impressed us at the time. For this reason we are inclined to suspect that the screen we got was at fault and is not indicative of what can be expected from this machine. Graphics however are still good because, while the Amstrad uses the same screen resolution as the IBM PC et al, it allows more colors.

At the back and the left of the keyboard . . . er, computer, are a number of interfaces including a joystick port, audio plug for connecting with a home hi-fi, and a five-pin DIN plug for use with a cassette machine. Also present are edge connectors to the motherboard which serve as an RS232 port and a Centronics port.

On the right is the Amstrad's three inch disk. Yes, Amstrad is the first manufacturer to adopt this format and it is almost certainly the cheapest disk drive computer on the market.

The disks themselves are unusual because while they are single sided, double density disks with 171K of storage, you can turn them over and use the other side. This is an old trick, much used by owners of Apple IIs whose machines do not use the light hole on a standard floppy disk. But this is the first computer we have ever seen that institutionalises this process.

The machine actually comes with three operating systems — AMSDOS, CP/M 3.0 and CP/M 2.2 — two languages, Basic and Digital Research's version of Logo — the well known

language designed for school children — and GSX graphics.

The two versions of CP/M are offered so that owners of earlier Amstrad computers will be able to run their software on the new machine. Amstrad do not guarantee upward compatibility, but say that most programs will work. Software compatibility is also claimed between the 6128 and the earlier 464 and 664 computers.

We were particularly interested in the business software available for the Amstrad and so the distributor, AWA-Thorn, sent along a host of programs, including two word processors (*Advanced Amsword* and *MicroScript*), a spreadsheet (*Microscript* again), a nominal ledger system, a purchase ledger system, and Amstrad's own combined business control program which incorporates stock control, sales invoicing and sales ledger. This last program requires two disk drives, and so we were unable to run it. Also included were several education programs and a few games.

Though none of the business software supplied can be regarded as being as powerful as similar software on a PC-compatible system, it nevertheless appears to work. The Combined Business Control program, for example, handles up to 250 product lines.

The documentation suggested the machine should run some of the better known CP/M software such as *Word-Star* and *Multiplan*, and says that any software copied across from another CP/M system should be configured to emulate a Heath H/19 system which closely resembles the Amstrad screen.

For a new machine, the Amstrad CPC6128 already has a good software base with more than 200 programs available and more being announced regularly. For though the Amstrad is unlikely to get the support of the American software giants, there are a number of British software companies which originally grew up around the Sinclair range of home computers and which are now supporting the Amstrad.

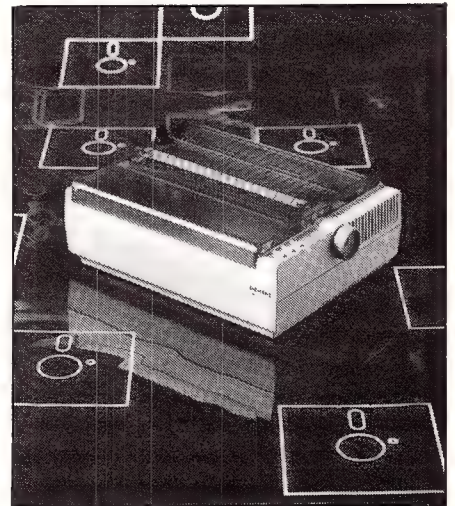
The documentation is both well written and well presented, though the hobbyist leanings of the machine come out through the manual's emphasis on programming in Basic, especially in the early chapters. On the other hand everything is there, including the sort of information one normally only finds in

the technical manual of a PC . . . if the manufacturer will sell you one.

At \$800 for a 128K, CP/M computer with disk drive and mono screen, the Amstrad is one of the bargains on the computer scene at present.

It has the potential to crash into the educational market and also looks to us as though it can justify its claim of being a suitable computer for the small businessman looking for something that he can use during the day before turning it over to the kids in the evening.

— Gary Ross



The quiet European

Siemens PT-88 printer

European computer equipment is like European cars. Excellent products, most of which we never see in this country because of the proximity of the Japanese market.

A case in point is the excellent Siemens PT-88 inkjet printer. It arrived without manual or printer cable but Siemen's helpful Sydney office soon made it clear that there was little need for a manual once the dip switches had been set to configure the machine.

Setting up the Siemens is a fairly straightforward operation. Unpacking is easy, but you have to take the top off the machine to get at the dip switches, a job which a Siemens technician said

BENCHTESTS

FACT FILE

Product: Siemens PT-88
Price: \$1200 (inc. interface)
Print method: Ink jet
Speed: 70.4 cps.
Parallel interface: Opt.
Serial interface: Yes
Print Buffer: Opt. 4K.
Tractor Feed: Yes
Cut sheet Feeder: Opt.

varies from easy to tricky, depending on how tightly the catches fit together.

Once inside, the switches were easy to get at and the top went back on with a minimum of fuss. What's more, the printer itself worked just the same way — with a minimum of fuss.

To begin with, it's fully Epson compatible, which makes it very close to IBM compatible. Without even bothering to reconfigure my test software, I was able to produce compressed, underlined and emphasised text and like an Epson dot-matrix, the printer will produce graphic screen dumps straight from the PC's screen.

You've just got to remember to run the *Graphics.Com* program from the DOS disk before attempting to do so. (Any IBM compatible printer will do the same thing.)

However the machine's best feature is the deafening silence that accompanies its operation. You can barely hear the faint whoosh-whoosh-whoosh as the print head sweeps back and forth over the page. The noisiest part is the paper feed mechanism which makes a slight sound as it pushes the page up another line.

Speed is also good. We timed the machine at 70.4 characters per second in draft mode, and a still respectable 28.3 cps in double strike mode.

Print quality depends very much on the paper you use. Ink jet printers, which spray ink onto the page in a controlled stream, do not work well with waxed letterhead paper.

Using standard tractor feed paper leads to a slight smudging as the ink soaks into the page and along the "grain" of the paper. The result is either unacceptable or unreadable.

The best results come with using proper ink-jet paper so if you plan to use the machine for correspondence, consider putting in a stock of this paper for those occasions.

Print quality is good, though the best results come by printing everything in double-strike mode. This is easy to produce in most situations — you just tell your software you want everything printed in bold.

The PT-88 is easy to thread and since the tractor feed is ahead of the platen rather than coming after it in the manner of the Epson FX-80, you do not find yourself constantly having to throw away perfectly good sheets of blank

paper. However, ink jet printers cannot produce carbon copies.

The Siemens comes in two versions, the PT-88 which has a 30 cm (12 inch) carriage, and the mechanically identical PT-89 has a 38 cm (15 inch) carriage.

The Siemens is well suited for an office with lots of printers and a concern for volume levels, or just the fussy user who does not like being assaulted about the ear drums whenever he wants a print out. If you're looking for a robust, eerily quiet, Epson compatible printer, the gentlemen from Siemens are waiting to talk to you.

— Gary Ross

Spelling the easy way

Symphony Spelling Checker

What do you get when you buy *Symphony Spelling Checker* for \$233?

The package contains a British-English dictionary (99,000 words), and an American dictionary (80,000 words), an empty auxiliary dictionary, an on-line help file and a sample document for you to try out with the *Symphony Spelling Checker*.

Every word in your document is checked against the dictionary, and you can also automatically correct repetitions of corrected words.

Documentation is excellent and includes a manual and a quick reference card which summarizes the *Spelling Checker* commands.

Before using the *Spelling Checker*, the manual suggests that you should know how to use the following *Symphony* keys, SERVICES (F9), MENU

(F10), ESCAPE, BREAK, and RETURN as well as have familiarity with the use of *Symphony* menus and setting sheets. As well you will need to know how to use Application Attach, Clear and Detach commands. If you wish to print out your dictionaries you will also need to use the File Import Text command. Don't let all of this technical talk scare you as the use of the package is so simple that once it is installed, anybody who is already creating documents using *Symphony*, will be able to become very proficient in using the *Spelling Checker* within one to two hours.

To install *Spelling Checker* on a twin floppy system, you must first copy several *Spelling Checker* files onto the Symphony Help and Tutorial disk. This requires about 130 Kb of storage area. If you have other application programs on this disk, you may not have enough room but you can overcome this by making a special copy of the Symphony Help and Tutorial disk especially for the *Spelling Checker* by using the DOS copy command and deleting the files that are not required. With all of its applications installed, *Symphony* is best used on a fixed disk system. If you have one it is possible to have all of the *Symphony* applications automatically installed when *Symphony* is loaded for the first time, using the Services Configuration Other Application command. It is possible to have up to eight applications automatically loaded. However these applications can significantly reduce the available memory, so some care must be exercised, especially if you are developing large spreadsheets.

To use *Spelling Checker* after you have created your document you first have to use the Services Application Attach to bring it into memory (if it is not automatically loaded). This requires 123 Kb of memory leaving around 200 Kb for your document on a PC with 640 Kb installed. If you are creating large documents then it is recommended that you have the maximum memory installed — 640 Kb. One of the benefits of holding most of the dictionary in memory is speed.

The program is activated through a new VERIFY command, which is located on the DOC menu. This is accessed by selecting the F10 Menu.

Spelling Checker identifies misspelled

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words as well as repeated words and lets you correct them on the screen within the text of the document. To find misspellings, *Spelling Checker* compares the words in your document with those in its dictionaries. If a word does not match, *Spelling Checker* highlights it and optionally creates a list of possibly correct words. You can choose the word you require, type in a new one, or correct a typographical error. As well as the standard dictionary, *Spelling Checker* supports up to six auxiliary dictionaries which are easily maintained from within the *Spelling Checker* environment. I have set up two auxiliary dictionaries: one for personal words such as names and addresses of friends and clients and another for special words for my business.

The corrections list *Spelling Checker* creates is based on the phonetics of the misspelled word. If you are not sure of the spelling of a word when typing your document, you should type it as you would pronounce it. In most cases, the *Spelling Checker* corrections list in-

FACT FILE

Product: Symphony Spelling Checker
Price: \$233
Documentation: Excellent 52 page manual
Skill level: Need to know Symphony wordprocessor
Distributor: Imagineering, (02) 212 1411

cludes the correct spelling for the word you want. This makes spelling easy.

As well as individually correcting misspelled words, *Spelling Checker* allows you to;

- ☐ correct repeated misspelling of a word,
- ☐ check the first word of each sentence for capitalisation,
- ☐ check hyphenated words as a unit or as two individual words,
- ☐ check for repeated words.

I use the *Spelling Checker* to great advantage when writing my letters or articles. When repeating words fre-

quently I use a code (usually the first three or so letters of the word). I use the *Spelling Checker* to correct the first of these codes and the rest are automatically corrected. Using this facility is similar to the Replace command on the Symphony Word Processing Menu. I find it much easier to use the *Spelling Checker* facility though, as I am continually prompted with the codes until they are all converted to acceptable words, whereas using the word processing command requires you to remember all of the codes so that you can convert them one at a time.

The *Spelling Checker* settings are stored in a setting sheet which is familiar to *Symphony* users. The setting sheet displays, the name of all of the dictionaries currently in use, the name of the print file to be used for dictionary maintenance, and the current correction options. Auxiliary dictionaries are easily maintained and *Spelling Checker* has options to add, delete and modify words in these dictionaries. It also allows you to copy the contents to a print file,

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which you can display on the screen or print onto paper using the DOS print command.

With all of these facilities available and considering its ease of use and speed, the *Symphony Spelling Checker* is bound to be a must for all who use *Symphony* for even small word processing jobs.

— Barry Roberts

A digital spanner

Cogitate Dump/Restore XT

Utility programs hold a special place in the computer world. While some are the digital equivalent of a spanner and screwdriver and others provide facilities that DOS forgot, others are designed to make life easier for the user. A sort of labor saving device for your labor saving device.

One such package is the *Cogitate Dump/Restore-XT* package. It is an integrated suite of programs designed to make life easier for the hard disk user.

It does this by simplifying the search for and selection of files, as well as allowing the fast backup and retrieval of hard disk files and sub-directories. The package consists of the following programs:

Cogtree.exe: This program displays the full tree structure of a hard disk's sub-directories in a graphic, easy to grasp, form. You can use the cursor keys to navigate through the sub-directories, and use the "+" and "-" keys on the far right of an IBM keyboard to see what files it contains and even see the contents of individual files. It also displays directories and statistical information on the directories and provides hard copy printouts. *Cogtree* is excellent, very easy to use, and involves less than ten keys.

Cogdir.exe: This is the directory search and selection utility. It takes extended wild card parameters from the command line, searches through the nominated directories and produces a list of files which match the parameters. The extended wild cards allow the user to specify multiple branches of the directory tree as well as multiple file and

extension wildcards. You can specify and exclude file types and choose multiple drives, include or exclude hidden files. A lot of other utilities have this and more but this little beauty saves a listing of your directory for use by other programs in the suite. One of these is; **Cogbkup.exe:** This program backs up hard disk files to diskette, using as its source the list of files produced by *Cogdir*. The data is compressed as it is copied to floppy with one third reductions in file size being common. Some files shrunk by as much as 50 per cent during testing. This data compression is invaluable, particularly if files are being stored for archival purposes. When a diskette fills up, the program asks the operator to insert another diskette, then continues.

Cogrstr.exe: This program reads the diskettes produced by *Cogbkup* and restores all or selected files to the hard disk.

Cogbatch.exe: The *Cogbatch* program allows MS/DOS commands to work on many files using the list produced by *Cogdir*. For example, if *Cogdir* were run to produce a list of all *.BAK files on a hard disk, then *Cogbatch* could be used to invoke the MS/DOS command, ERASE, and delete all the *.BAK files from all directories and sub-directories in one stroke.

Cogx.exe: *Cogx* is a method of packaging many commands or batch commands in a single file. Each *Cogx* command is given a keyword, followed by a series of MS/DOS commands which will be executed whenever that keyword is typed. You could, for example, have the keyword "ACCTS" linked to a series of commands that would automatically log you into the right sub-directory, rewrite the path command so that DOS can find your accounting software, then load that software. It's like having a library of batch commands.

Cogx.dat: This is a sample file of commands that can be executed by *Cogx*. Among them is a CLEANUP command that uses *Cogdir* and *Cogbatch* to clean up all the "junk" files on your disk. This file can be edited using your word processor or text editor.

Cogset.exe: This is a utility that allows file attributes to be set or path names to be changed.

Coginst.exe: This is the installation and customising program for *Cogbkup.exe*

FACT FILE

Product: Cogitate Dump/Restore XT.

Price: \$195.

Requirements: MS-DOS 2.0 or higher.

Documentation: 24 page manual.

Skill level: Intermediate.

Supplier: Software Suppliers.

and *Cogrstr.exe*. Essentially, you run it to tell the backup and restore programs what disk you are using. If your hard disk is drive F, the software needs to know this to work properly.

Cogdrxt.doc: This is a copy of the manual and it is quite comprehensive when you find the right parts. That's right, it does not have an index. Fortunately it is only 24 pages. The file is in *WordStar* format and should be easy to print.

To test the backup and restore capabilities incorporated in *Cogdir*, I installed *CONCURRENT PC DOS* on my 20 MB hard disk. I then used *Cogdir* to create a *Cogdir.dat* file. Though the system files that concurrent uses are hidden, *Cogdir* has an option which lets it read hidden files. It also lets you exclude file types and sub-directories. So now I had a list of all the files I wanted to backup. Using an editor to view the list I discovered some files which are only used during installation. Figuring I would not need these on the hard disk, I deleted the lines which contained their names from the file (they should include an editor in *Cogtree*). I then tried to backup the system and it seemed to go very smoothly until it tried to copy a system file but could not find it. The solution was to use concurrent's SET command to set all files to DIR instead of system. The backup then went smoothly.

After erasing all the concurrent files on the hard disk, I restored the four disks (concurrent comes on five floppies) and presto, concurrent ran.

Spurred on by this success I decided that the program worked successfully enough for me to trust it with my sacred work files which, until now, I had laboriously backed up with batch copy

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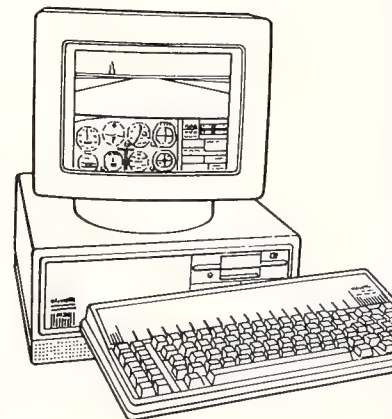
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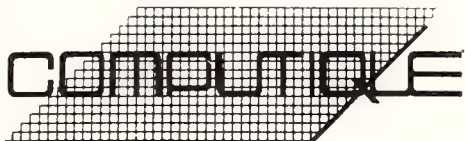
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macros. My work area totals four MB which normally require about 12 floppies to store. *Cogbkup* saved it on six and one third floppies. (I filled the extra space with a copy of the *Cogdir.dat* file and the backup and restore programs. This is a good practice since different backup and restore programs use different methods of coding the files.)

I am impressed. The *Cogitate* suite of utilities are an excellent addition to DOS, though the benefits offered will largely depend on the user's expertise. It basically works like an extension of DOS and will be wielded most effectively by someone with a good working knowledge of DOS.

I think they are great. Indeed there is a definite need for a general interface along the lines of the *Cogtree* program. I hope this approach will be extended and developed further. — Lou Brown

Yet more data base for Mac

Omnis 3

Database management programmes for the Apple Macintosh are flowing thick and fast and every month I seem to have a new one to review.

The latest is *Omnis 3*, the big brother of *Omnis 2* which I reviewed in the August issue of *Today's Computers*.

Omnis 3 is a close relative of *Omnis 2*, but in no way is it merely an upgrade although the files are upwardly compatible.

With *Omnis 3* you can construct very sophisticated "automated" procedures without the need for learning a language or writing command programs.

Omnis 3 follows the Mac interface conventions reasonably well, although possibly not as closely as *Helix* which is its only rival for the King-of-the-Mac-database crown.

The worst break with Mac conventions in *Omnis 3* is the use of both the TAB and the <RETURN> keys for data entry. These are not used inter-

changably — in some circumstances you use TAB to enter one element of the data and shift onto the next and in others you key <RETURN> or point-and-click on an [OK] button.

The way *Omnis 3* is constructed, TAB accepts data into fields, and <RETURN> or [OK] accepts records into the file, so there is logic behind the programmer's decision — they needed both. Anyway, it's one of those petty annoyances that you get used to fairly quickly.

Apart from this, little else about *Omnis 3* has fazed me at all and when I think back to the six months of sheer effort I put into learning *dBase II*, this is some cause for rejoicing.

The manual is solid, detailed and comprehensible, in fact one of the best I have come across. The first 160 pages are a well designed tutorial which quickly give you a feel for the possibilities and introduces you systematically to the concepts. The remainder is reference and utilities information.

There are four disks in the pack: a program disk, two system's disks (one is a backup) and an examples disk. It is difficult to give a full run-down on a program as complex as this in the space of a few thousand words, so instead I will put out some of the more unusual aspects and look at these in detail. But first, an overview:

Omnis 3 is a full "relational" database manager, which means that you can have a series of database files which can be linked together. In fact with *Omnis* as with *dBase*, the other classic small-computer database, the linkage between files can be made invisible to the user, so he/she feels that they are dealing with only one list of information.

It is important to be able to link together databases to avoid having to duplicate information (especially the entry of information) and to enable you to keep each database down to a manageable size. There are security implications also; you might want to give staff access to one area of client data, but restrict access to another.

With *Omnis* you establish your new database file then set the connections between this and the other files on the disk. This is done by selecting Set Connections from the Amend file format menu, and clicking on the file names to which you wish to establish a linkage.

From this point on, fields from any of the linked files can be used in the design of entry, search or report formats (either with screen layouts or printer formats). You can therefore have a screen format which contains data to a number of different files but this distinction is transparent to the user.

As with *dBase*, screens can be set up for data entry and report formats constructed in such a way that totally unskilled people can use the system. Unless this is possible the use of these complex data management programs will be limited only to those with years of computer experience.

With *Omnis*, if you can type and point with the mouse, you can handle a stock-control database or modify accounts-receivable records once the formats have been established.

The difference between the *dBase* and *Omnis* approach comes from the fact that *Omnis* is written for the Mac whereas *dBase* was designed for the conventional business CP/M (and now MS-DOS) computers. *Omnis* therefore has at-hand many features that would need to be laboriously written into a special command program with *dBase*. For instance:

Let's suppose that I am building a database to hold records of potential customers. All of my business is in NSW and most of this is in the central Sydney district. It makes little sense to have the typist type "NSW" and "2000" five thousand times when adding names and addresses.

Omnis has a very simple entry procedure which overcomes this problem. When you design the entry page layout you give both the state and postcode fields "default:check" attributes. The "default" value is the one that will appear automatically in the field each time a new record is inserted (unless it is deliberately overwritten) and the "check" is a value (or series of values) against which any new entry must be checked before being accepted.

In this case the state field would have a default value of "NSW" and the postcode field would have a default of "2000". This is a trivial example but it serves to illustrate the mechanism.


A colon (:) separates the default from the check value which is used to make sure that certain absolute limits are not exceeded. You could provide a check to ensure that any entered postcode was

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BENCHTESTS

FACT FILE

Product: Omnis 3

Price: \$730

Requirements: Mac with 512K and two drives

Documentation: Thick, thorough and easy to read

Skill level: Moderately advanced

Distributor: Software Corporation of Australia (03) 347 7011 or (02) 328 7074

not (less than) <2000 or (greater than) >2999. For example, you would use this to trap incorrect postcode numbers added accidentally. A checking system like this is more likely to be used for meaningful values like product costs, salaries, etc.

The old GIGO principle (garbage in — garbage out) applies more to database than to other forms of applications program, so the provision of these defaults and checks is a very important part of making systems foolproof. With *dBase II or III* it would take a dozen lines of complex code to achieve what *Omnis* has provided here with a point-and-click menu selection.

The programmers of *Omnis* have taken a leaf from the *dBase* book by providing you with a series of Basic-like functions. LEN is used to give you the length of a "string" (group of characters — usually a word); MID gives you a section out of a string; UPP converts all characters to upper case. These, and the others in a good range of operators and functions are available to the user/programmer to customise a whole range of data checking, reporting and manipulation features.

There are a similar range of functions and operators in *dBase* which are part of the programming language. You incorporate these into the code which automates the functions of the program, but *Omnis* does the same with much less fuss and bother.

When you are setting up your databases, you can treat "Calculated" as being one of the field attributes and then provide the formula to be used. Calculations can be of the complex arithmetical type or involve the logical manipulation of strings, such as: (MID(ANIMAL,3,1)="T") & (ANIMAL="CAT")

This might appear to be a meaningless jumble of jargon, but to anyone with experience in Basic the logic is relatively simple. The left side of the Boolean equation tests to see if the third letter in a field called "Animal" is the letter T, and passes it only if the field variable is not 'CAT'.

With *Omnis 3* this calculation could be used to delimit a temporary field (which is the equivalent of a variable in most languages), and then the temporary field would be used further for some purpose. It is simpler and more logical to select fields with complex

attributes rather than to write a post-selection procedure into a language stream. This is the closest *Omnis 3* gets to a 'command language'.

So although *Omnis* does not use a programming language system like *dBase*, it achieves at least as much without. It lacks the ability to chain together a series of automatic command programs which can be left to update stock-lists, fill out order forms and post debits and credits overnight, but this is because it does not need them. With the Mac, complex sorts and selections happen in seconds rather than minutes or hours, so overnight automated procedures are not really necessary. If you need to go any more complex than this, you will probably be better off with a time-sharing mainframe.

One aspect of *Omnis 3* which jumps it to a new plane in Mac software is that it is very close to being a program that writes programs. Under the Options menu is a command 'Menus' which takes you through into a Menu design window, so you are able to customise your database design to the point where even the Main Menu bar is your own creation.

The Menu selection allows you to create new menus and to rename, delete, install, amend, or remove existing ones. In operation, the procedure is simplicity itself; to add to an existing menu, you simply type in the command text you want to appear on the screen and then select the command functions you need. You can make a choice from entering date, printing a report, or searching for data and you can specify the type of action and the details of the file or field to which the action applies. To top this all off, you can then specify that this new menu command is only available to one or more user-passwords. Unless

the correct password is given when entering the program, the customised menu selection remains invisible.

Omnis's menu-design function is a very simple and sophisticated system which provides customised roller-blind menus that look and act exactly like the conventional Mac menus. It is very impressive to see your own customised menu-bar spread across the top of the screen and roll down the menu-blinds to find your own command words.

Omnis's password facility allows you to specify different passwords for different levels of users and also to define the mode of access that each level of user has. You can determine who has complete or partial use of your file formats, entry layouts, report layouts, menus and other items in the application. It is a very flexible security system. Up to eight passwords can be provided in addition to the Master user who sets up the system.

You can define two levels of password limitations. At the top level a password can be granted or denied access, say, to the database entry and report layouts, but it is also possible for you to prevent access to a particular layout, while granting access to layouts in general.

Omnis 3 uses two types of files in general operations. The data files can theoretically handle up to 16 megabytes of information in one chunk (limited by the Mac itself) but up to four Mac files can be linked and treated as one, so the theoretical limit of the system is around 64 Mbytes. In the near future Macs might have a hard disk this big.

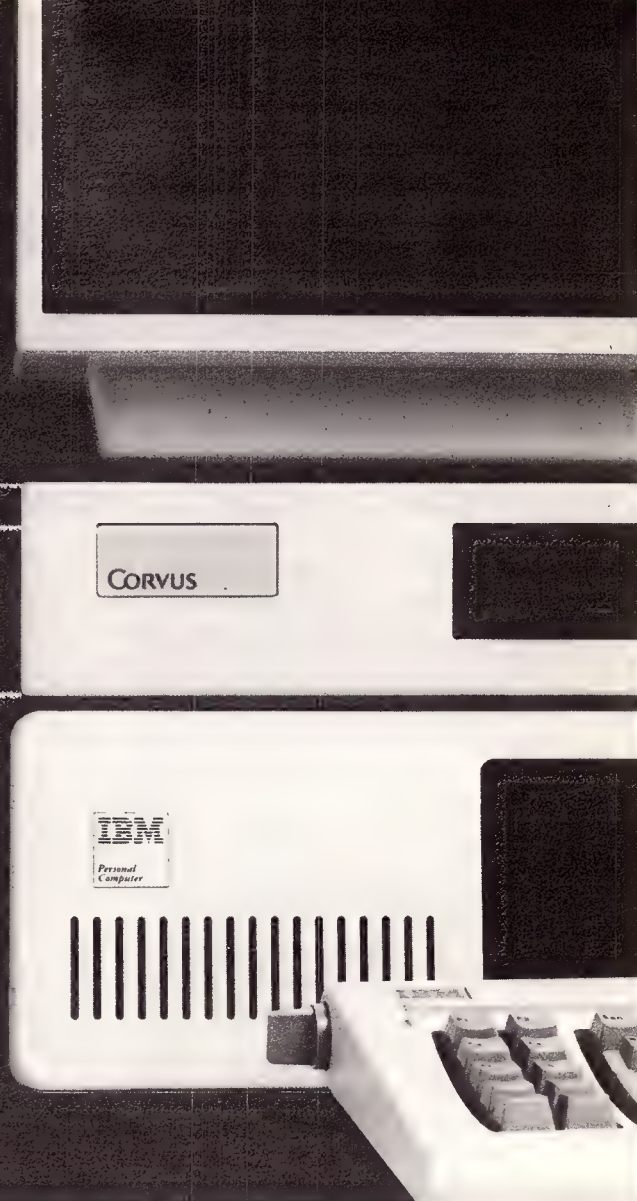
There is no limit to the maximum number of records in each file, and one database can have up to 24 linked files — including all indexes and file connections. Special commands allow you to switch data files without leaving the database.

A second type of file *Omnis* calls 'Library' files are used to store all information relating to the design and structure of the database. Within this library are usually six different format types: file formats, entry layouts, reports, menus, search formats and work formats.

Up to 12 different file formats can be open at any one time, together with 12 different indexes and a maximum of 120 fields for each file. Formats are manipulated by the library management option of the utilities program.

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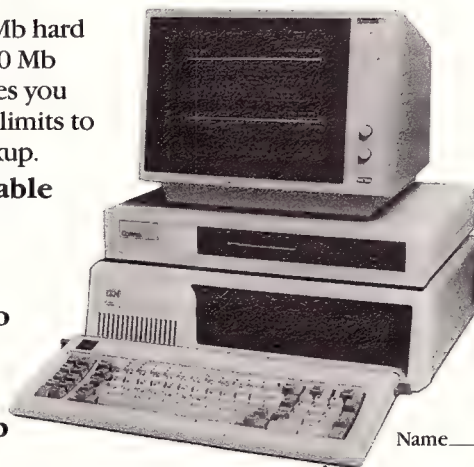


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FACT FILE

Product: Mite Ver 3.0

Price: \$249

Requirements: IBM PC or compatible, Min 64K memory, DOS 2.0 or higher, 1 disk drive.

Documentation: Comprehensive ring-bound manual.

Supplier: Telecorp, (02) 450 2522.

I have been ploughing through the program and tutorials for a couple of weeks and there is a lot more about the program that needs to be said, but would only be comprehensible if you were sitting down at a Mac with the program up and running.

This is a problem with reviewing database managers; they are necessarily complex in design because they are called upon to do such a wide range of jobs. Word processors just push around words, spreadsheets layout numbers and do some simple calculations, but database managers are called upon to do everything from maintaining and manipulating large company accounts to keeping outback parish burial records; from listing a multi-national's inventories to recording a schoolboy's stamp collection.

With *Omnis 2* now possibly the best of the small list management programs for the Mac, and *Omnis 3* probably the best of the larger database managers, Software Corporation of Australia seem to have an unbeatable combination. Furthermore you can set up your database on *Omnis 2* and transport it easily to *Omnis 3* at a later date if you find the need for more complex or extensive operations, so you can feel your way in to the program. — Stewart Fist

Satisfied customers

Mite Ver 3.0

Mite first came our way hidden in the back pocket of Framework. But we were too busy getting to know Framework to really spend much time with Mite. It worked, it talked to our Hayes compatible modem (one of the very early DataNetComm In-Modem units) and we were satisfied.

But as we began to use it more and more, we became increasingly impressed by the product. The release of version 3.0 gives us an opportunity to talk about the program itself.

Mite is an American communications program developed by Mycroft Laboratories. It runs in 90K of memory, and

is a relatively straight forward program to drive.

It is menu-driven: a list of options comes up on the screen when you first load the program and when you want to do something, you select the appropriate option by hitting a key which in most cases leads you to another menu and a further range of selections. Mnemonics have been used to help you remember what they are, though this system occasionally breaks down.

All the menus come with their own, highly informative Help screens which are accessed by typing a "?" and then the letter which represents the option in question.

Most options work as a toggle alternating between on and off. A few toggle between several values though some ask you for a value. One such option is the setting for the Baud rate. This is one of the four essential parameters one must set to access another computer, the others being parity, the number of data bits (seven or eight) and the number of stop bits (one or two).

The Baud rate sets the speed in bytes per minute at which the two systems will communicate. This is one of the few occasions that the on-screen Help fails you and forces you to go hunting through the generally excellent manual because Mite doesn't tell you what these legal rates are . . . and neither does the Help screen.

Mite is capable of working with an autodial modem, and if everything has been properly set up, it will dial the number for you before waiting for the carrier signal. If no signal has been detected after 15 seconds, Mite tells you the problem and goes back to the main menu.

If you toggle between communications and Mite, say to set up a file transfer, Mite keeps a copy of the contents of your screen and restores it when you go back to communicating

with the outside world. Very nice.

Not so nice is the organisation of options. I hunted for ages for the option that would let me send a copy of my communications to the printer. I found it in the Text File Download menu. I should have guessed — that's where you go to set up the capture on disk of your session with the other computer.

This is also where one would expect to find the option that turns off the carrier signal for machine to machine transfers, but you have to go to the options menu to do that. There is also a textfile upload menu, and another for what Mycroft calls Binary File Transfers.

This is where you go if you want to use one of the recognised file transfer protocols such as the popular Xmodem protocol. Other protocols supported include Xmodem/B, a variant of Xmodem, used for multi-file transfers; Clink which is the proprietary Crosstalk technique; IBM PC asynchronous for communications with mainframe communications using a program on the mainframe for the transfer, and Mite's own multi-file transfer protocol. This worked well through the test session but brought to light a different problem.

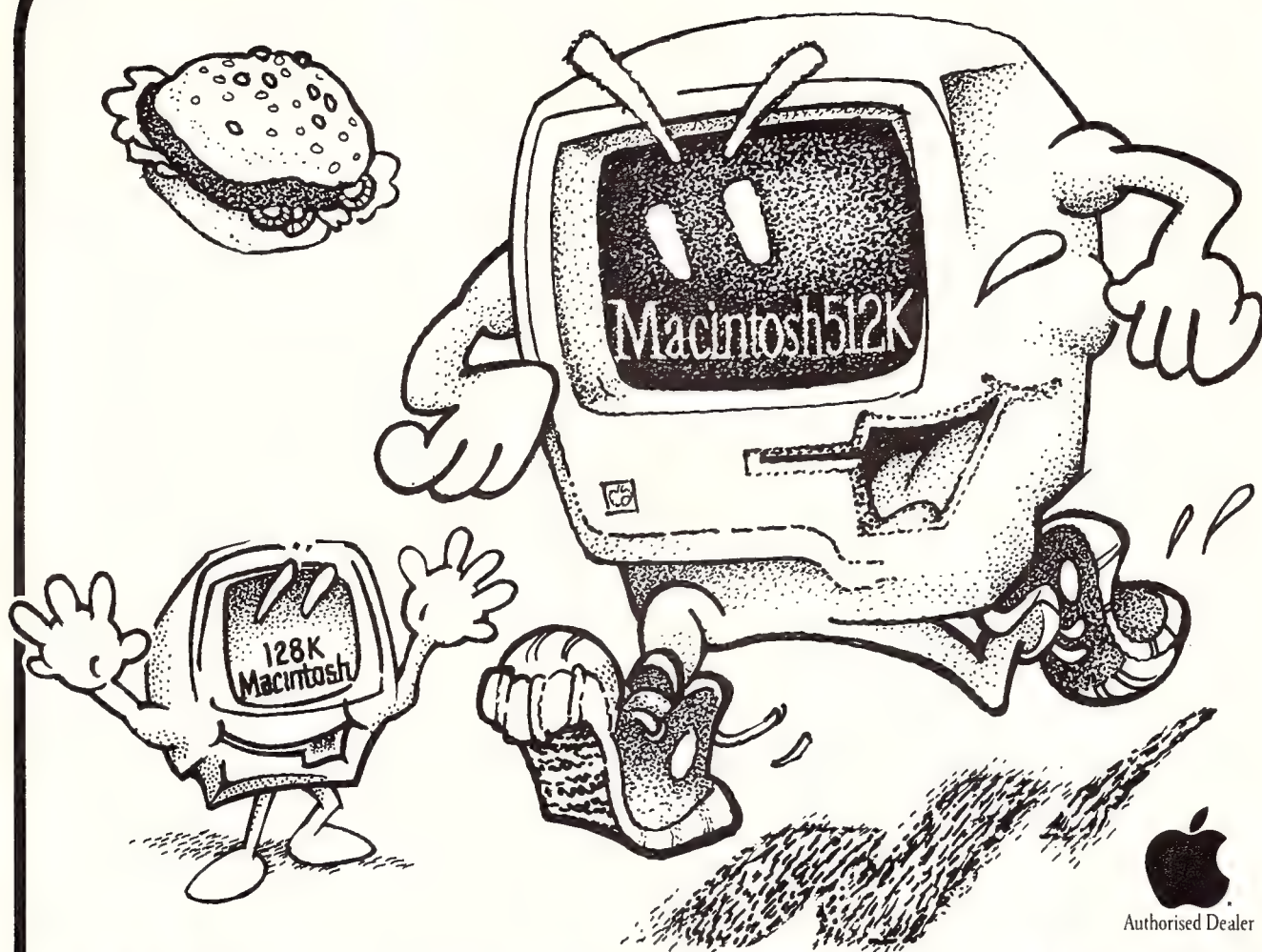
If you are copying something to disk off the phone and you run out of disk space, Mite has just enough time to report the problem before it is thrown off by the operating system. If you want to remain in contact with your other party, you will then have to be quick about reloading the program.

Mite also lets you save your various configurations to disk and reload them again as required. This is very useful as it gives you the option of virtually automating the entire communications process.

Just load the file for the service you want and hit G to "Go Start Communications". With the phone number, password and other information already stored in the file, communications suddenly become a very quick and simple process.

All in all, Mite is an excellent communications package — well documented, straight forward and easy to use. Though not quite as fully featured as Crosstalk, its main commercial rival in the PC market, it is easier to learn and drive. I expect Mite will win a lot of friends in the next few years.

— Gary Ross



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Video teachers for business

In house video training packages — teaching software applications such as *Lotus 1-2-3*, *dBase II* and *III*, *WordStar* and *Visicalc* — are proving very popular with large companies which find the courses not only cheaper but time saving.

The packages come from companies such as Deltak, ASI and AY Systems.

The parent company of AY Systems is the international accounting firm, Arthur Young and it developed the packages in the United States to train staff.

Cecilia Ward of AY Systems says more than 300 Australian companies use their video training packages and the cost saving benefits are enormous.

"A lot of companies lose two or three days of productivity when staff are sent to outside courses and it costs around \$300 each. With self teaching it costs \$250 to \$700 for the lot," she says.

Prices begin at \$295 for *Multimate* and range up to \$695 for advanced *Lotus 1-2-3*. The video is accompanied by written text which breaks the lesson with exercises which the student does on the personal computer.

The "down to earth" approach to the videos is appealing to novices and the tapes are made for laymen with little computer jargon, says Ward.

John Allan, previously manager of Citicorp's technology training and now manager of executive compensation, says the company bought a *Lotus 1-2-3* video package from AY Systems with the rights to duplicate as many copies as it needed. So far 150 Citicorp employees have learnt how to set up a spreadsheet and Allan says feedback is positive.

He says the course leads students gently and does not force too much so people go away happy that they can use *Lotus*.

Allan says Citicorp found that internal training is cheaper than external courses and keeps staff in the building. "You also have the flexibility to make

By Julie Power and
Philippa Tyndale

classes as big or as small as you like."

Monier bought seven copies of *Lotus 1-2-3* to train staff and Geoff Elith, group manager of information systems, says reaction to the video has varied.

Elith says the videos represent quite a saving and there is reluctance at Monier to spend time and money on courses not specific to the company. "We run a tight staff and we can't afford to send people out for two or three days. This

'Down to earth' approach is appealing to novices

way we can fit it in around their work — they can do two or three hours a week," he says.

Deltak has been making training videos since 1969. It originally catered for the IBM mainframe market but the increase in the number of personal computer users prompted the company to expand their library of videos.

It now includes around 3000 courses covering data processing, languages, databases, communications, end user training and professional development. Most of the courses are specific to software compatible with IBM PCs.

John Collins, Deltak's NSW branch manager, says the advantages are that lessons are easy to schedule. They are self paced and it works out at around one third of the cost of external classes.

Deltak's customers include Westpac, ANZ, BHP and CRA. Payment is by the number of course months. About \$27,000 will buy you 180 course months, that is 180 courses at one month each or 60 courses at three months each and so on.

ASI also has a library of more than 3000 video courses — many of them for PCs — which clients can subscribe to. These include *Lotus 1-2-3*, *Symphony*, *Visicalc* and *MS-DOS*, and clients can rent the videos for a month or longer. The price ranges between \$80 and \$135 for each video, depending on the size of the contract.

Like Deltak, the growing use of PCs in large companies has led ASI to develop an extensive library of PC courses. National Australia Bank, for example, has recently signed a contract for 1500 IBM PCs and has started to train staff using video training courses.

One of the benefits of video training, according to ASI, is that it is non-threatening for the user.

However, Colin Wilson, of Management Technology Education disagrees with this method, particularly for novices. He says that many of the courses are "like taking a manual and putting it on the screen."

"The human element is very important. That's the whole point of a training centre. Some people have a real block. Even an intelligent person may have to ask some things three times," says Wilson.

"Until they can listen to the computer, and answer the question that is asked, they need someone to explain carefully."

Wilson doubts whether, in reality, video training is time-saving. The user "may have to run through the video 20 times before they get it right," he says.

Brian Hacker, ASI director, agrees that video training is not the complete answer. He says there are different levels in all courses, regardless of whether they are videos or formal lessons.

One of the understated advantages is that many people feel intimidated by their peers in a classroom situation.

"Many senior executives," he says, "won't reveal how little they know in this environment." ■

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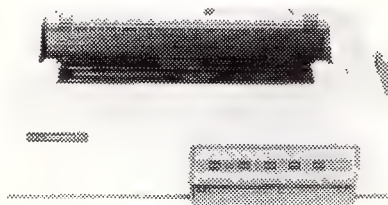
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Today's Computers, October 1985

INFORMATION SERVICES



Booming videotex

The booming videotex market in Australia has prompted a rush of supporting products and services. Since its introduction in March, Telecom's public videotex service, Viatel, has grown at an unprecedented rate.

The large base of home and business personal computer users has given Viatel an edge over similar services launched in Europe in the 1970s and while European services struggled to establish themselves Viatel has already outstripped Telecom's projections.

As a result the market is filling up

By John Kavanagh

The market is filling up with companies offering hardware and services for Viatel and a range of private videotex systems

with companies offering hardware and services for Viatel and a range of private videotex systems.

Brian Smith, manager of Telecom's Viatel Division, says the service has 5000 subscribers. This is more than double Telecom's prediction and now it is looking at a subscriber base of 14,000 for the first year.

The number of information providers has doubled since Viatel started and there are now more than 110 organisations providing some kind of public information on the system.

The most important of those informa-

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Model 5151



Technical Data - HR 39 & HR 134

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V. Scan Frequency: 50/60Hz
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Sync. H - TTL Level Positive
Sync. V - TTL Level Negative
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80 x 25 format
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INFORMATION SERVICES

tion providers is the Commonwealth Bank, whose Telebank service is the first fully interactive, transactional offering on Viatel.

The bank reports that it has 2000 users of Telebank and Russ Brodbeck, from the Commonwealth's electronic banking division, says the bank is expanding the service following its initial success.

Customers will be able to run a greater number of accounts through the system and the Commonwealth will offer a brokerage facility, using the John Fairfax Moneywatch service and broker, Dominguez Barry Samuel Montagu Ltd.

Brodbeck says the mix of business and home customers for Telebank is about half and half. This is similar to the general Viatel user profile — business and domestic users share the service equally.

The high number of domestic users was not anticipated but is a result of the very large number of cheap personal computers in people's homes.

Len Adelman, videotex sales manager at Rank Electronics, estimates that 65 percent of Viatel users are connecting to the system with a personal computer. Twenty percent are using Tandata television converters and 15 percent are using dedicated videotex units. Adelman believes that the bulk of the PCs are Commodore 64s and IBM PCs.

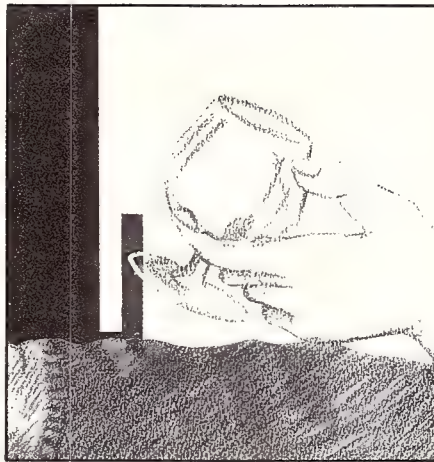
"The Commodore 64 is the cheapest way to go," says Adelman. "It sells for about \$450 and you get a kit, which includes modem and software, for \$400. Everything else starts at about twice that price.

"There are about four or five companies, including Rank, selling kits for the Commodore and the IBM."

Telecom is predicting continued strong growth in the system and is upgrading its capabilities, most recently adding a telex interface. The number of interactive, rather than passive information services will increase.

Other banks are looking at the potential of home banking. The John Fairfax Moneywatch service has attracted a lot of interest.

Moneywatch provides users with a coverage of Australian stock and futures markets together with wide coverage of US and UK financial markets. It also offers some interactive brokerage facili-



ties, introducing the concept of telebroking. Along with the expanding range of public offerings, private videotex system are growing fast.

There are a number of options for companies and organisations wanting to establish private communications networks using videotex technology.

Viatel will accommodate closed user groups — nodes on the public system that can only be entered by selected end users. Rival videotex operators, including ICL, Mayne Nickless and Elders Pastoral, offer an alternative service to Viatel and a range of computer companies, like Prime, Sperry, GEC, AAV and Computer Power will set up private corporate videotex systems.

Growth in private systems is moving as quickly as Viatel itself. Service companies report that the demand for Viatel systems and private systems is running at about the same rate. Telecom says that Austpac, the packet switching network that carries the private videotex traffic, is growing about 10 per cent a month. The big advantages of videotex are that it is cheap and easy.

GEC Digital won the contract to provide the Viatel mainframe computer system. Since then GEC has announced its entry into the general market, with Tandata terminals and adaptors, full public and private systems, modems, bureau facilities, database creation and umbrella services.

Terry Crews, manager of GEC's information technology department, says GEC plans to manufacture the Tandata range in Australia. Prestel, Teletel and Naplps are the three videotex protocols.

Prestel is the system developed by British Telecom and is used by Telecom Australia for Viatel; Teletel is the system

developed in France and commonly used in Europe; and Naplps is a North American standard that is not commonly used but is preferred because it has better graphics than the other systems.

Any of these protocols can be used in private systems, although Prestel is the most popular because it meets the Telecom standard.

Prime's Mark Hunter says it is worth conforming to the standard, "A stock controller in a supermarket chain can use a terminal to look at his stock levels, do his ordering, send messages on the private system and then switch into Viatel to do some banking, check the latest money market rates and make some travel arrangements.

"That all happens on one terminal on a system that requires absolutely no expertise."

Prime's Viewdata system is being used by Castlemaine Tooheys for stock control and ordering and by software distributor Imagineering as an ordering system for its dealers. Computer Power, which established the Elders Pastoral system, believes it is necessary to offer different options.

Computer power will be complementing its Aragon range later this year when it introduces a North American system from AT & T.

Comcorp provides private systems running on ICL's Bulletin network. Comcorp's manager, Tim Fisk, believes Bulletin is a more sophisticated system with more functionality for business users.

"Users can run order entry programs and reservation systems on videotex using Bulletin's enhanced software," says Fisk.

Like the service providers, equipment suppliers offer a range of videotex technologies. Philips offers terminals that are Prestel and Teletel compatible.

"Companies would use Teletel for extra security," says Barry Nuttal, videotex product manager for Philips. "If you are running on a different protocol there is less danger that users of the public system will break into your network."

Rank Electronics is selling kits with a modem and software for a number of PCs as well as dedicated videotex terminals. The company believes that choice of a terminal is determined by

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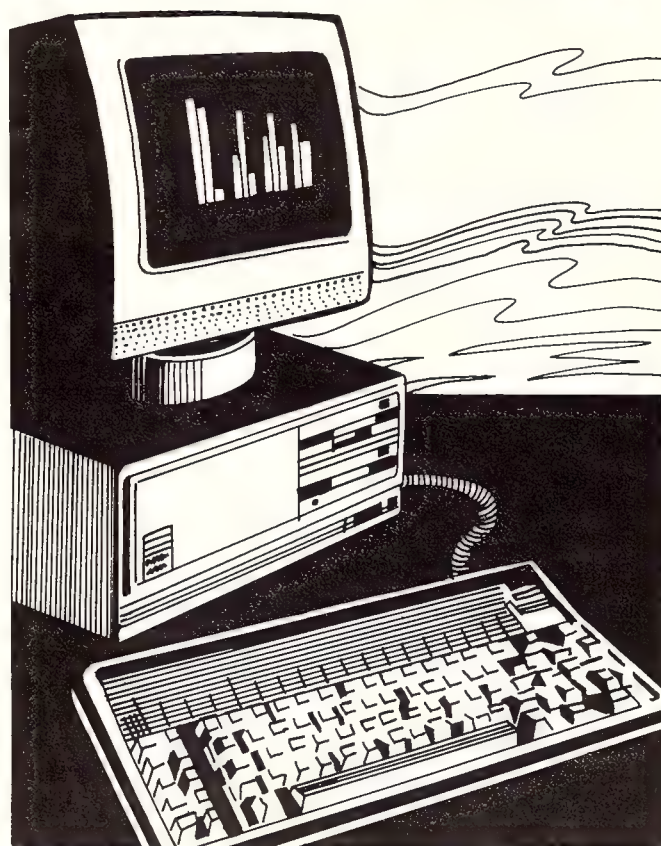
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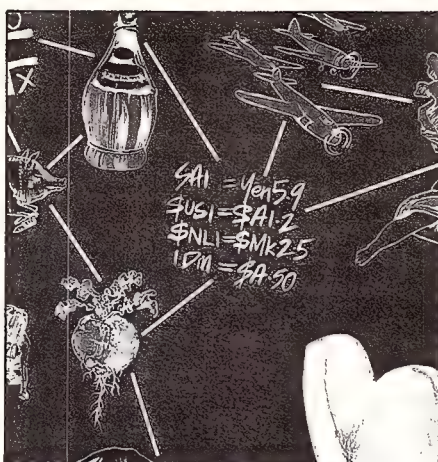
INFORMATION SERVICES

the amount of time needed on videotex. A small business is unlikely to invest in two terminals when a PC will do two jobs, but a large company using videotex regularly would only tie up the office if it tried to combine videotex and personal computing on one machine.

Cheryl Barrow, sales manager of Exatron, which sells the Desmet videotex terminal, says that PCs defeat the whole purpose of videotex.

"A dedicated terminal is so easy to use. A PC is much more complicated; they are really two different things. Most videotex terminals have attachments which allow them to connect to a host computer anyway," she says.

Exatron is supplying the terminals to Ancol for its newsagents service. DEC has a number of offerings for its systems. Computer Power is one of DEC's largest value added marketers, while DEC is offering its own VTX Prestel standard system to run with its VAX machines. The Chatswood Digital Centre has a locally made software package for the Rainbow, Micro Tel.



AWA has a videotex terminal concentrator which allows builders of private systems to keep their communications costs in line. Sendata is the major OEM for a number of PC kit suppliers and is bringing out new models to enhance its videotex range.

The company says sales of videotex products have been very strong.

Sony reports that it is selling a lot of printers to go with videotex units as a

lot of users want hard copies of videotex screens. Sony is selling its videotex range through Visionhire and Thorn EMI.

There is not much for small companies which want a cheap way of creating their own videotex pages. Most of the system-building services are pitched at the corporate market, but two companies, Syscorp and Tele Corp, have joined forces to offer a Prestel page creation system running on an IBM PC XT and supporting eight modems.

The modems come from Tele Corp, whose Tulpi is a popular product, and Syscorp has written the software.

Most private systems are designed to run parallel with conventional data communications systems. They slot easily into the corporate network and are useful where the demand is for simple, easily updated information and a non-technical interactive capability. Public and private videotex will play a big part in the communications scene of the future. ■

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The Meaning of Viatel

Viatel, Telecom's brand new videotex system is now with us, but what does it mean?

If there was ever an area of the modern world with a confusing terminology it is this. There's teletext, Teletext, teletex, Teletex, videotex, viewdata, Viatel, Prestel, Seventext, Ceefax, Oracle, Antiope, Teletel . . . I could go on and on.

In Australia, due to years of Government inaction, we now have a number of different, and incompatible, private videotex systems which adds chaos to the confusion. Part of the trouble also is that there are two very similar, but quite different, information-on-demand services which have grown up together and reached maturity at much the same time. Both arrived in Australia about the same time.

Videotex is the CCITT generic term for all forms of the information-on-demand system which were designed originally to be viewed on a standard television set. Lately the term has tended to be limited to those systems connected to computer databases by video-cable or telephone lines as distinct from the broadcast approach.

Teletext decoders work by 'grabbing' a page of information at a time from within the normal television signal; the page is usually twenty lines, each with forty characters of alpha-numeric text. Usually the pages are text combined with a few primitive graphics.

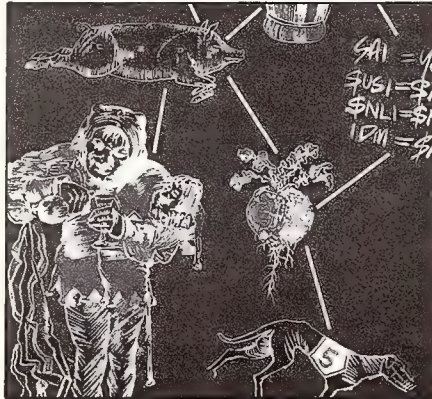
The television station broadcasts a cycle of these pages and by pressing the keys on your home decoder you can electronically 'grab' and hold a particular page of information as it comes around the cycle.

In the development period of videotex and teletext there were three main approaches, each quite different and incompatible:

The Alpha-mosaic

This was the approach taken by the British in introducing the first broadcast information service in 1975. It originated from research aimed at providing closed-captioning for deaf television viewers and it went under the

By Stewart Fist



names of Ceefax and Oracle. The British Post Office extended the idea as an interactive, wired, (videotex) information service for home and business users — originally under the name Viewdata, which later became Prestel.

The technology used in both systems is essentially similar. It is a bit like a telex machine — the code is sent over the wires, but the character-shape is already resident in the machine itself.

This approach economises on the amount of information transmitted, giving high reliability at the cost of flexibility. The variety of characters displayed and the graphic quality of the display is fixed by the decoder circuitry.

The mosaic part of the generic title comes from the techniques used to display graphic material, the quality of which is relatively primitive, although work is progressing on enhancing this capability. At present a diagonal line will appear as a series of small rectangular steps displayed in staircase fashion across the screen.

At the time the first British systems were being designed this alpha-mosaic approach was necessary. The price of electronic intelligence and information storage was high, and so decoder circuitry needed to be kept to a minimum. Terminal costs are still an important consideration.

The French systems — broadcast Antiope and wired Teletel — took the British alpha-mosaic idea but adapted it to make it more independent of the

hardware. The designers found that they were unable to provide special characters, such as accents, used in the French language and they realised that the problem would be compounded with Cyrillic and ideographic languages.

The French devised their system using packet-data transmission with screen-image displays independent of the data transmission approach. This is part-way towards the Canadian Telidon system and provides better graphics and a wider range of characters.

The Alpha-geometric

The Canadians moved into teletext and videotex through experiments providing detailed electronic maps for pilots. Their emphasis, therefore, was on the need for good graphic representation and they achieved this by using picture description instructions rather than straight alpha-numeric codes.

The result was Telidon. The name is used for both the broadcast and the wired forms although it has only really been successful via the telephone lines.

Essentially Telidon describes, or codes, information as geometric elements: a point, line, arc, area and polygon; they are called "geometric primitives". Images do not appear line by line across the screen as they do in the British system, but are drawn by a moving dot.

The Canadians claim that the geometric approach provides superior graphic resolution and relative independence from the hardware. It relies, however, on the use of an in-built microprocessor and a lot of memory in the decoder unit which raises the cost of the home unit. In effect a Telidon decoder is a microcomputer.

Telidon can also provide direct communications between two terminals for use as direct electronic mail, something not possible with Prestel-like services, and it has the potential to accept both Antiope and Prestel signals with some slight modifications.

AT&T in the United States has muddied the waters somewhat by announcing a videotex specification which incorporates the Telidon alpha-geometric



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and the Antiope alpha-mosaic techniques with some of their own ideas.

It claims that the hybrid system will be compatible with Prestel, but it seems to preclude the use of the British broadcast teletext. This hybrid has now been incorporated into a wider set of standards known as NAPLPS, the North American Presentation Level Protocol Standard, which is one of the two major world presentation standards.

The Alpha-photographic

The Japanese found that neither the alpha-mosaic nor alpha-geometric approach was acceptable for their characters. They needed near photographic quality images to handle the complexity of thousands of ideographs and so Captain appeared.

Captain is the only truly universal videotex system in that it is capable of handling all written languages and high-resolution graphics as well, but it pays a high price in terms of the information transmission rate.

Captain operates much more like standard television than its competition: it stores each frame as patterns which fill the whole screen. Each pattern is transmitted by digital code on a line-by-line horizontal-scanning basis and for this reason it needs a special wide-band transmission channel. In the decoder, the pattern-recognition approach means that a longer time is taken to electronically paint each display.

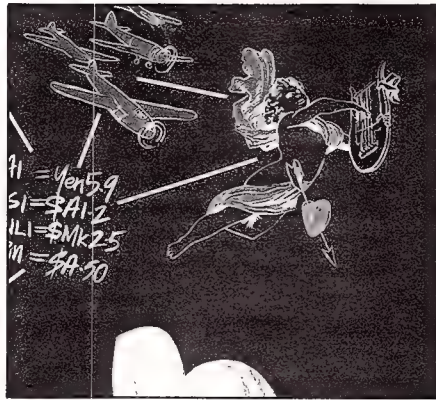
It is notable that the electronic giants, Matsushita and Sony, have sat on the sidelines in the teletext/videotex debate though Sony recently introduced decoders for some of its television sets).

To industry analysts the Sony/Matsushita stance is a clear indication that Japan's electronics industry does not see Captain as a possible world standard.

With the Japanese out of the world action (at least temporarily) the battleground seems to be divided between the two code-transmission camps.

The British, French and the other European countries have lined up behind the Conference Europeenne des Postes et Telecommunications (CEPT) protocol standard — with emphasis on cheaper decoder/keypad hardware and immediate introduction.

Prestel (and Australia's Viatel) is now seen as level one in the implementation of the CEPT recommendations.



The new German Bildschirmtext system operates at level three, which still uses alpha-mosaic techniques but with "dynamic redefinable character sets" much like the original French Antiope.

The British and the French have also managed to get their act together enough to be jointly working on Picture Prestel for the new European 64,000 b/s integrated-services digital network, due to come on-stream in late 1985. This is a level five development which would allow the user to receive high-resolution, full-color, still photographs.

The Canadians and AT&T have agreed on NAPLPS with higher resolution and better graphics in the expectation that large scale integration (LSI) circuitry will eventually minimise the price differential caused by their need for more intelligent terminals. But at the present time North America has more Prestel-based systems than NAPLPS, and if anything, Prestel seems to be winning.

The European camp is also looking to LSI to bring down the cost of hardware. The relative cost of 1K of memory in the days when Ceefax and Oracle were being designed is soon likely to be matched by the new 64K chips, capable of storing a number of advance pages of text while the first selection is being read.

This would reduce the page-waiting time for teletext systems even further and allow them to improve the service greatly.

Enthusiasm now transcends mere profit motive with the governments of Canada, France, Britain and Japan all sponsoring the development of home-grown systems. National pride is also at stake and the skirmish has escalated now into a full scale battle, with patriotism fired by the lure of a multi-billion dollar industry dangling at the end of the line.

Gradings

Level 1. These are the current British services like Ceefax, Oracle and Prestel which are now standards in about 12 countries around the world. They are economical in terms of transmitted information, but relatively inflexible, and have poor graphics.

Level 2. The Antiope level with more characters and additional graphic capabilities. This level will handle all Roman-based alphabets with room for special symbols if needed.

Level 3. The West German Bildschirmtext and hybrid systems (i.e. Antiope/Telidon) are aiming to provide high-definition graphics with a dynamically redefinable character set. The screen is still divided into 24 lines by 40 characters, but it can be sub-divided again by a 12 x 10 dot matrix.

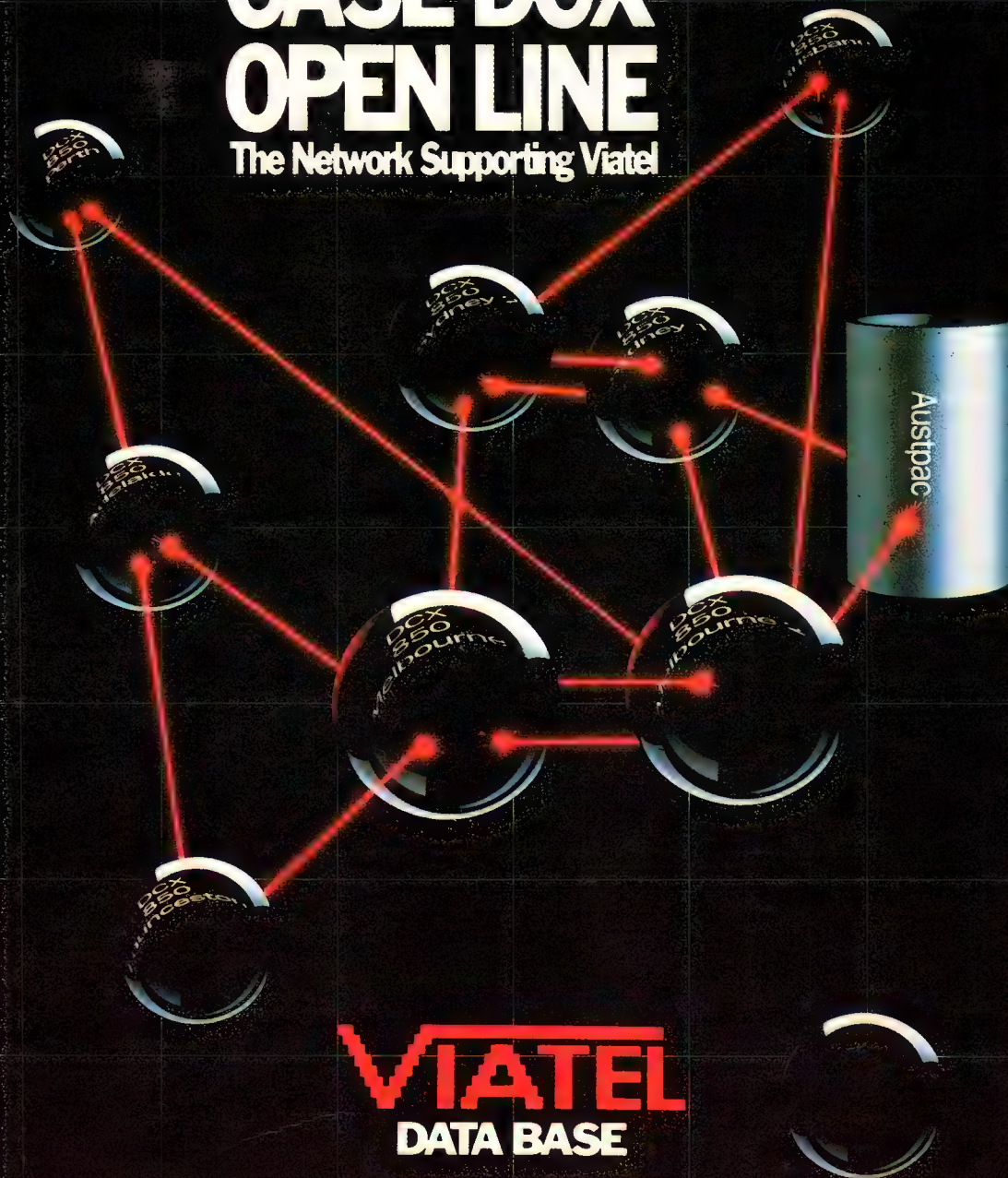
Level 4. Telidon and other true alpha-geometric coding systems provide high-resolution graphics and electronic mail capabilities — but at the expense of costly intelligence and memory in the decoder.

Level 5. Captain and other alpha-photographic systems provide an unlimited range of characters and photographic quality images. The cost is in transmission speed and decoder complexity. ■

	Mosaic	Geometric	Photographic
Graphic construction	3 x 2 Rectangle	Geometric primitives	Point by point
Resolution	72 x 80 pixels	240 x 320 pixels	Photographic
Terminal storage	1 KByte	40 KBytes	48+ KBytes
Transmission service	Voice bandwidths	Voice bandwidths	Wide bandwidths
Terminal cost	lowest	medium	highest

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Help	CH	Determines how Symphony reads the Help disk.	FORMAT	F	Modify display format of numbers.
Auto	CA	Selects a file for auto loading.	RANGE	R	Manages worksheet ranges.
Other	CO	Sets default clock display, file-translation, National character set and Applications to be attached.	Name Create Delete	RN RNC RND	Useful for printing & copying. Adds a Range Name to the list. Deletes Range Names from the list.
Update APPLICATIONS	CU	Stores updated default settings. Accesses Symphony applications.	Labels	RNL	Assigns a label to an adjacent cell as its range name.
Attach	AA	Loads Applications into memory.	Reset Table	RNR RNT	Deletes all range names. Writes a list of range names into the worksheet.
Detach	AD	Detaches an Application.	Transpose	RT	Reorders rows to columns & vice versa.
Invoke	AI	Activates an attached Application.	Values	RV	Copies cell values to a new range.
Clear	AC	Detaches all Applications.	Label-Alignment Protect	RL RP	Alters label-prefix in a range. Protects cells from modification when used with Global-Protection.
SETTINGS	S	Sets global settings for current worksheet.	Fill	RF	Fills a range with a sequence of numbers.
Learn	SL	Used for automatic macro writing.	Distribution	RD	Analyses a range and counts how many records fall into specific numeric intervals. Used extensively for automatic "what-if" analysis.
Range	SLR	Sets range for macro storage.	What-If	RW	Accesses Graph setting sheets.
Erase	SLE	Erases macro Learn range.	GRAPH	G	Displays the current graph.
Cancel	SLC	Cancels the Learn range.	Preview	GP	Displays the first setting sheet.
No. Yes	SLN,Y	Enables/Disables learn facility.	1st-Settings	G1	Displays the second setting sheet.
Security	SS	Locks/Unlocks worksheet.	2nd-Settings	G2	
Global-Protection	SG	Turns the Global-Protection facility on or off.	Image-Save	GI	Saves the current graph image on disk for later printing.
Auto-Execute	SA	Sets a macro to be processed automatically when worksheet is first loaded into memory.			
Communications	SC	Specifies communication configuration file.			
NEW	N	Clears contents of entire worksheet.			
EXIT	E	Ends a Symphony session. Remember to save your file first.			
SHEET WINDOW COMMANDS (F10 Menu)	C		QUERY	Q	Accesses database facility.
From Range:		Selects the area to copy from	Settings	QS	Displays database setting sheet.
To Range:		Selects the area to copy into	Find	QF	Highlights selected records.
MOVE	M	Selects the area to move from	Extract	QE	Extracts selected records into a range in the worksheet.
From Range:		Selects the area to move from	Unique	QU	Extracts unique records only.
To Range:		Selects the area to move into	Delete	QD	Deletes selected records.
ERASE	E	Erases a range of the worksheet.	Record-Sort	QR	Sorts the database records.
			Parse	QP	Creates new database records from lines of imported text.
INSERT	I	Inserts entire Rows or Columns	SETTINGS	S	Sets for current window settings.
Columns, Rows	IC,R	within a window's restrict range	Label-Prefix	SL	Sets default label-prefix.
Global	IG	or throughout the entire worksheet (Global Columns or Rows).	Recalculation	SR	Set recalculation method.
DELETE	D	Deletes rows or columns within a window's restrict range or throughout the entire worksheet	Titles	ST	Freezes columns/rows as titles.
Columns, Rows	DC,R		Both	STB	Sets both title rows and columns.
Global	DG		Horizontal	STH	Sets title rows above cursor.
WIDTH	W	(Global Columns or Rows). Sets the display width of columns.	Vertical	STV	Sets title columns left of cursor.
			Clear	STC	Clears titles from the worksheet.
			Format	SF	Sets default format for the current window.
			Width	SW	Sets default column width.

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By Mike McColl Jones

**Or how St. Peter
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joins Australian ballet company" — "Rupert Murdoch buys Vatican. Bible now in tabloid form" — "Marcel Marceau joins BP as the quiet achiever" — "Jacques Cousteau named in 'bottom of the harbor' scheme".

But perhaps the biggest shock head-

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line of all is . . . "St Peter Retrenched", and I believe it is absolutely true . . . he has been unceremoniously dumped from his record breaking, long running job. How and why did this happen? Well, from sources I can't divulge, here is the true story of how St Peter got the Khyber!

It all started when He in heaven received a gift subscription to *Today's Computers*. After thumbing through the copy, He became so knowledgeable (which of course He is anyway), that He started believing that He was "Big Blue", and without even thinking of the consequences decided to further investigate this computer business.

A top computer salesperson was immediately despatched to Heaven, complete with briefcase, samples of hardware and software, personal luggage, Jet-Set travel vouchers, and ethereal express card. Up there if you lose your credit card, you don't look for Mr Wong, you call St Anthony.

Well, He was most impressed with what the salesperson had to say, and became a computer convert immediately. The salesperson then returned, which might explain why a computer person you know looks like he does. He's had a glimpse of the "other side".

The decision was made, a computer would be installed in heaven, and St Peter was on the dole.

Naturally St Peter was devastated . . . After all, not many people are retrenched after holding a job for nearly two thousand years and the only good news for St Peter was that his super cheque would be a beauty.

Anyway, the decision had been made and nothing was to stand in the way of progress. The only thing that remained to be done was for Him to make the formal announcement.

It read "Memo: all. As of today, a computer will formally replace St Peter as 2IC up here. The computer will be installed at the Pearly Gate, and will replace Pete's old fashioned 'head count' method. The future of Peter will be resolved between his solicitors and mine in the coming weeks and you will all be informed." signed Him.

Now, the first job for the computer was to list everyone in alphabetical order, from Abel, who was the first, to whoever is the most recent arrival. (Isn't

it amazing how people on earth die in alphabetical order, to make things much neater for the newspaper columns?) Computerising all the names will make things a lot easier than St Peter's old fashioned head count. An added advantage for people alive on earth will be that with a computer in Heaven, they can make their reservations simply by picking up their 'phone and calling Bass.

Mind you, one initial draw-back to installing a computer in Heaven, especially according to some of the older residents, will be the absence of the "personal touch". Good old St Pete was a very good front man and as he welcomed a new arrival, he had a kindly word, and a pertinent comment to make.

He really did his research. For example, some of his more famous introductory comments over the centuries have been:

To Moses, "With the greatest respect Moses, I'm looking forward to the next 10 — Bo Derek."

To Nero, "Ok, you can stop fiddling, the fire's out."

To Julius Caesar, "If the 'phone had been invented, I'd have called to warn you about Brutus."

To Shakespeare, "Will — As you like it!"

To Tarzan, "I've seen some swings in my day, but that was a ripper!"

To Hitler, "If you'd stuck to paper-hanging, you'd be allowed in."

To Churchill, "I understand, but don't make that sign with your fingers to the Boss."

Anyway, with the advent of the computer, Heaven is now a radically different place to live. Things seem to be working smoothly enough, new arrivals are inserting punch cards at the Pearly Gates and life goes on as usual, except for one thing — St Peter is redundant.

HE was most upset about St Peter's position, so He had a brainwave. He sent Ol' Pete down to earth to see if there was anything like his old job down there, and do you know there is! Pete has never been as happy in his life. He's received a clearance from Him, and moved down to take up his new position.

Yes, he's now fully employed operating a set of manual railway crossing gates. Unlike the last time, this new job may not last 1985 years, but one thing's for sure, it'll seem that long!

Problems with sums

Barry Roberts answers some of the most asked questions about *Lotus 1-2-3* and *Symphony*.

Question: I have set up a logical function (@if) to check the cross addition of my spreadsheet by comparing the results of two intermediate calculations (one a sum of a row and the other a sum of a column of numbers). The results of these formulae at first appeared to be equal and I was surprised when the result of the (@if) statement showed that they were not. The formula was written as follows: @ if (cell 1 = cell 2, cell 1, @err). What has happened? Have I written the formula incorrectly?

Answer: First, you have written the logical test function correctly. The function as written tests if cell 1 equals cell 2. If this is true, then the result of the formula will be cell 1. However if this is false the result of the formula will be the *Lotus* function @err. This is a standard test that I also use regularly to check cross additions.

Your problem is that *Lotus* and *Symphony* remember values to 15 decimal points of precision, despite the fact that you may have the numbers formatted to a lower number of decimals. It is important to realise that formatting of cells only changes their appearance on the screen and printouts and not their precision. Consequently two numbers, such as 356.98 and 356.980002, although appearing to be the same if formatted to two decimals, are different. If they are tested in the logical statement above, the result of the formula will be @err. This is the cause of your problem. A solution is to use the @round function to truncate the number of decimals for each formula to a more reasonable number. The following format should be used; @round (cell 1, n) where n is the number of decimal places required.

For *Symphony* users you can use text as the results of a logical function. The above formula could have been altered to read as follows, @if (cell 1 = cell 2, cell 1, "numbers do not balance"). It is important to include the text in double quotes.



Question: I have been using the word processing facility of *Symphony* for creating a large number of documents. I have been using Format lines extensively and find it tedious to scan between them using the PageUp and PageDown keys. Is there a quicker way?

Answer: The quickest way to move to either end of the document is by use of the HOME & END HOME key combinations. Pressing the END HOME key will move the cursor to the end of the document and pressing the HOME key will move it to the start of the document.

Symphony has the facility to allow you to name Format lines, a similar process to Range Naming in the *Symphony* spreadsheet. The F10 Menu Line-Marker command is used for this task. After a Format line is named, you can move to it very quickly by pressing F5 F10 F10, then selecting the name from the menu displayed on the screen.

Question: Is there a simple way to transpose *Lotus 1-2-3* rows and columns?

Answer: No. To undertake that task in *Lotus 1-2-3* requires very complicated macros which can be quite tricky indeed.

Fortunately, *Symphony* contains a command for this — F10 Range Transpose. If you require this option, I suggest you upgrade to *Symphony*.

Question: Is there any simple way of telling how wide my spreadsheet is? This would be particularly useful for printing purposes.

Answer: In *Lotus 1-2-3* you must manually calculate the particular width by counting the individual cell widths. These are displayed by use of the / Worksheet Column-width Set command.

To simplify this manual operation, *Lotus* have included a new function in *Symphony* to enable the attributes of a cell to be calculated automatically. This function is entered as follows @cell ("width", A1..A1). If a row of the worksheet is left for this formula (including a formula for each cell) a Sum function can be used across the contents of that row to calculate the cumulative width of the worksheet.

Question: I often highlight large ranges for printing purposes and have difficulty remembering if I have included all the appropriate columns and rows. Quite often I find I have to press ESC and start again. Is there a better way?

Answer: In *Lotus 1-2-3* this can be easily accomplished by pressing the decimal point key once you have highlighted the range. Notice that the blinking cursor rotates clockwise and that the range definition alters accordingly. This technique allows you to see all of the four corners of the worksheet in turn, to ensure that you have the right range definition. The same facility is available in *Symphony*, but you need to press the Tab key to rotate the cursor.

Barry Roberts is the National Newsletter Editor for the Australasian Lotus Users Association. He also manages Practical Software and can be contacted on (03) 267 4844.

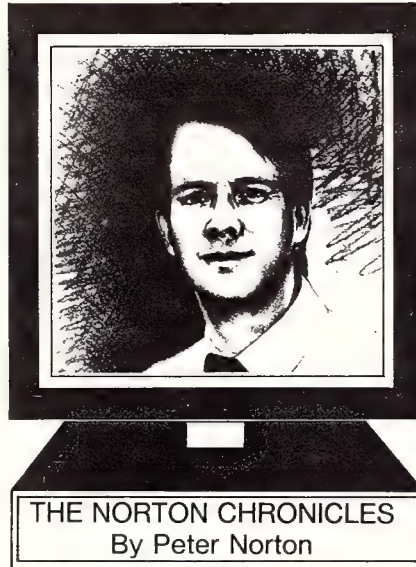
Breaking the barrier

Although 32 megabytes is a lot of storage for most purposes, it isn't a very comfortable general limit on the size of disks that you can attach to your computer. After all, it is only three times the venerable old XT's 10-megabyte disk and a mere 50 percent more than the AT's standard 20-megabyte disk.

I want to look at just how rigid the barrier is and discuss some of the ways that you can use to get around it. I will also address the pros and cons of some approaches that may break the barrier altogether.

The simplest and least disruptive way to get around the barrier is to divide a disk into partitions that aren't any larger than 32 megabytes each. DOS's 32-megabyte limit isn't an intrinsic limit on the disk itself, but on the part of the disk that DOS works with as a single unit.

For example, if you install a 52-megabyte disk in your computer, DOS can't take the whole 52 megabytes in one piece, but it can deal with it in two



parts. For the first part, you use the FDISK utility to create a conventional DOS partition on the disk, of any size up to 32 megabytes. Then you have a 52-megabyte disk with a 32-megabyte

standard DOS partition, leaving 20 megabytes hanging in thin air. What then? Because DOS can't get to that left-over 20 megabytes on its own, you have to install a device driver to handle the leftover as another partition.

From DOS's view, the 20-megabyte partition is a separate disk with its own drive letter. So, if the standard 32-megabyte DOS partition is drive C:, the 20-megabyte partition might appear to be the D: drive. Both drives are physically part of the same disk drive, but they logically act as if they were two separate disks — and DOS can handle that with no problem. All it takes is a small piece of software magic in the device driver. I tried this kind of set-up when I tested a 52-megabyte hard disk drive and it worked fine.

This partitioned-disk approach has one obvious disadvantage, however. It lets you work with bigger disks and increases your storage capacity more or less without limit, but at the cost of having these "small" disk partitions.

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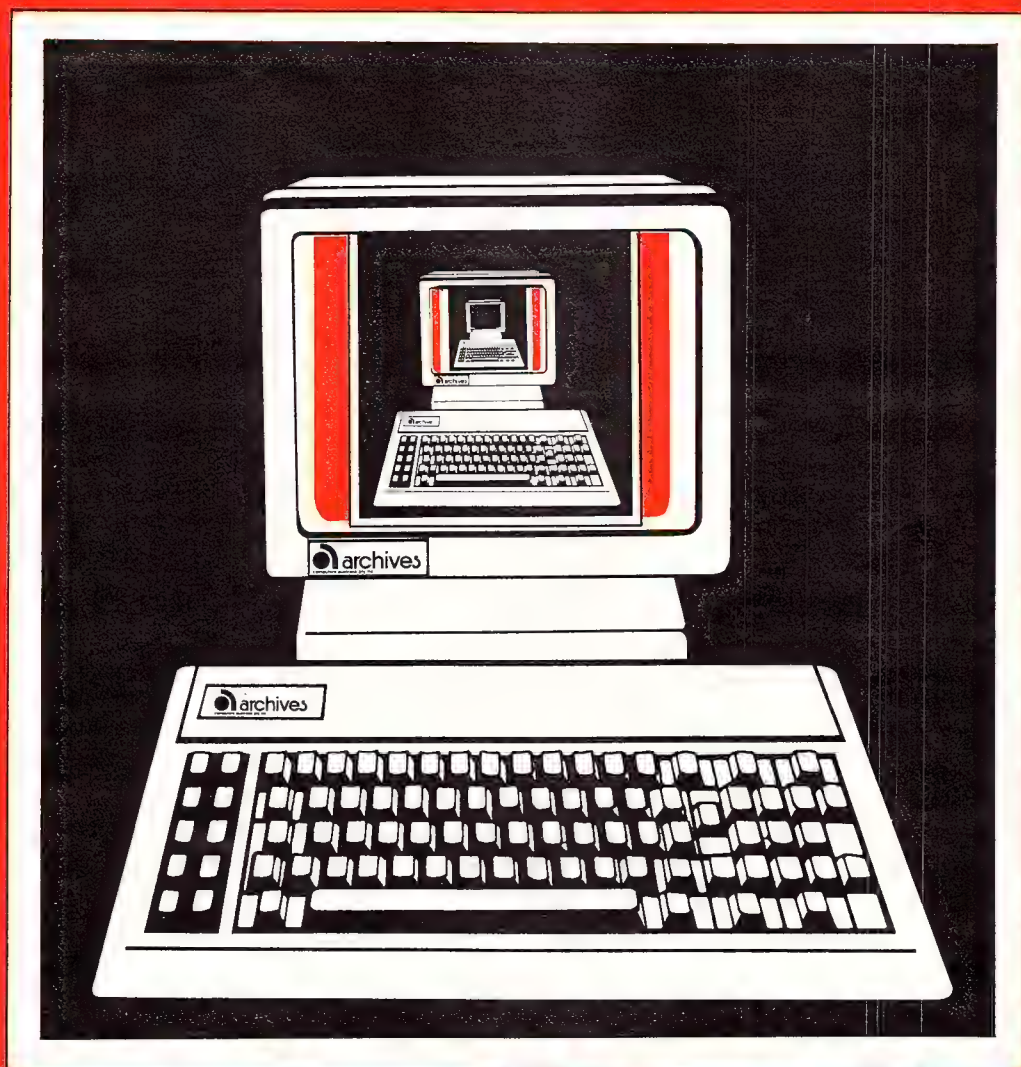
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For most situations, partitioning a big disk into several separate logical drives is only a small nuisance, but in some extreme cases it's crippling.

What do you do if you need a single disk file that's 40 megabytes in size? If you use a 52-megabyte disk and divide it into 32- and 20-megabyte partitions, you would have more than enough room for 40 megabytes of data, but you couldn't store it all in one file because a single file can't be spread across two logical drives. Of course, if you're contemplating that much data you can probably find a practical way to divvy it up into several files. Nevertheless, you can also see that partitioning a disk just to get access to more storage space isn't an ideal solution.

Other, cleaner approaches to the problem have been considered, but major obstacles stand in their paths. One such approach is to increase the size of the disk that DOS can handle. You will recall that the 32-megabyte barrier exists because of the simple multiplication of two numbers: disk sectors are 512 bytes, or $\frac{1}{2}$ K, and DOS keeps track of sectors with 16-bit numbers that range from 0 to 64K. In other words, DOS can work only with 64K separate $\frac{1}{2}$ K sectors, which multiplies out to 32 megabytes.

So what if you increase either one or both of those numbers? For instance, it seems logical that if you change the way DOS stores these numbers — say, increasing them to 24-bit or 32-bit integers — you would vastly increase the number of sectors (and, as a result, the disk size) that DOS can handle. This solution seems to be just an internal matter for DOS, and if some of DOS's internal workings are restructured, then DOS should be able to handle big disks. Unfortunately, it's not easy to restructure an internal element of DOS.

On the other hand, I have seen this sort of magic performed once before in conjunction with the introduction of DOS 3.0 and the AT's 20-megabyte disk. Another internal convention of DOS, the entries in the FAT table used to keep track of disk clusters, was changed from 12 bits to 16 bits. This change no doubt caused an internal revolution inside DOS, but it also solved a problem similar to the one of increasing the number of sectors that DOS can handle.

Why can't this magic be performed

again to increase the range of sector numbers beyond 64K? Unfortunately, while the FAT table was strictly an internal DOS matter that almost no other programs touched (my file recovery programs are a rare exception to this rule), the sector identification numbers aren't completely internal. They are visible to the outside world in a couple of ways, such as through official DOS services for those of your programs that use the standard 16-bit sector numbers.

And if DOS were to switch to using a larger sector number, then a handful of major compatibility problems would probably arise. Programs that use these sector numbers may not be able to run with any version of DOS that uses bigger numbers. Although not many programs do use these numbers, they are an official public part of DOS. Changing them would involve a formal break in upward compatibility from version to version of DOS.

Well, then, what about changing the other number — the size of a sector in bytes? At first glance it appears that this is a much more flexible item. All disks can work with sectors two or even four times as big as the standard 512-byte, or $\frac{1}{2}$ K, sector size. And, thankfully, nothing in the definition of DOS's services implies a disk's underlying sector size. Therefore, it seems that there is no real obstacle to upping the sector size to increase the size of the disks with which DOS can work.

However, there is a really nasty snag: DOS isn't the only system that might be working with your disks. For example, you can partition hard disks to work with other operating systems, such as CP/M-86, the UCSD p-System, Xenix, PC-IX and other Unix-type systems. It is one thing to introduce a new sector size and adapt DOS to it, but it is quite another to say that other systems would have to be changed, too.

Does that mean that you are stuck with 32-megabyte disks? Definitely not. First off, as I have been pointing out, you can always hang bigger disks on your machine, and you can use all the space too. As things stand now, you just can't use it in chunks bigger than 32 megabytes — not much to cry about there. Second, it's a pretty safe bet that technicians are working on DOS with hammer and tongs to break it out of this old 32-megabyte barrier. ■

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Apple IIe	\$2095	65C02	1.0	64/128K	ProDOS, DOS 3.3, Pascal 1.2	7	External monitor
Apple Macintosh	\$3295	68000	8.0	128/512K	The Finder, CP/M 68000	Nil	High res b/w
Apricot PC	\$5305	8086	5.0	256/720K	MS DOS 2.0, CP/M	2	9" or 12" green
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AWA Corona	\$3893	8088	4.77	128/640K	MS DOS, CP/M 86, REVELATION	4	80 x 25
AWA Corona Portable	\$4182	8088	4.77	128/512K	MS DOS, CP/M 86, REVELATION	4	80 x 25
AWA Corona Mega PC	\$13,112	8088	4.77	256/512K	MS DOS 3.1	11 (runs up to eight terminal processor boards)	80 x 25 green phosphor
Bondwell 14	\$2295	Z80A	4.0	128K	CP/M 3.0	Nil	9" amber
Canon AS-100	\$7250	8088	4.0	128/512K	MS DOS, CP/M 86	3	30 cm mono or color
Challenger	\$2990	8086	4.77	256/640K	MS DOS, CP/M 86	5	Separate
Commodore PC10	\$3700	8088	4.77	256/640K	MS DOS	5	12" green
Compaq Portable	\$4860	8088	4.77	256/640K	MS DOS	3	80 x 25
Data General DG-1	\$5600	80C88	4.40	256/512K	MS DOS 2.11, CP/M 86	5 on expansion chassis	25 x 80 LCD
Epson PX-8	\$1469	Z80A	2.5	64K	CP/M 2.2	Nil	80 x 8
Epson QX-16	\$3864	8088	5.30	256/512K	MS DOS, Multifonts CP/M	3	12" high res green
Ericsson PC	\$4999	8088	4.77	256/640K	MS DOS 2.11, Conc. CP/M 86	6	30 cm 80 x 25 amber or color
Grid Compass	\$5315	8086, 8087	N/A	256/512K	MS DOS, Grid-OS	Nil	80 x 25 electroluminescent
HP Touchscreen II	\$6138	8088	8.0	256/640K	MS DOS, CP/M 86	2	12" 27 x 80
HP Touchscreen Max II	\$10,770	8088	8.0	256/640K	MS DOS, CP/M 86	2	12" 27 x 80
HP 110	\$4834	80C86	5.33	272K	MS DOS 2.11	Nil	16 x 80 LCD
IBM PC	\$4789	8088	4.77	128/640K	PC DOS, CP/M 86	5	Mono or color
IBM PC Portable	\$4233	8088	4.77	256/640K	PC DOS, CP/M 86	5	Mono or color

This is *Today's Computers'* exclusive listing of major specifications and prices of the main micro-computers available in Australia. If your product is not listed, ring Julie Power on (02) 235 6617 and ask to be included.

Now here is an explanation of the Hardware Guide, followed by some of the more commonly used computer terms.

Price: Based on the cost of a machine with two disk drives (where applicable), monochrome screen, minimum memory and includes sales tax.

CPU: The central processing unit that is the "brains" of the machine.

Speed (MHz): The rate of which the computer carries out its work.

Memory: The minimum and maximum amount of data the system can maintain, measured in kilobytes of which 2K is equivalent to one page or about 1000 words.

Operating system: Software that controls the operation of a standard computer.

Expansion slots: Spaces for specially designed circuit boards which extend the computer's capabilities.

PRESENTED BY

**SOURCEWARE**If you're an IBM PC user,
you're a Sourceware user.

Resolution (pixels)	I/O ports	Disk drives	Hard disk	Software	Comments
N/A	2 serial, 1 parallel	2 x 800K 5 1/2"	Opt ext 10Mb	WP, Supercalc, account, project, database	Computer in a case. Multiple disk formats
560 x 192	2 serial, mouse i'face	1 x 140K 5 1/4"	Optional	20 hours of tutorial on disk	Apple's first portable. LCD screen available
560 x 192	1 parallel, 1 serial	1 x 140K 5 1/4"	Optional	ProDOS users disk tutorial	Price is for starter system
512 x 342	2 RS-422/RS-232	1 x 400K 3 1/2"	Optional	Tutorial, MacWrite, MacPaint	Tomorrow's computer today
800 x 400	RS-232, Centronics	Up to two 720K 3 1/2" floppies	5 or 10MB, Xi model	Communications, SuperCalc, SuperWriter, etc.	Keyboard microscreen runs most IBM software
640 x 200	Centronics, RS-232	720K 3 1/2" diskette	10Mb optional, external	Diary, SuperCalc, SuperPlanner, SuperWriter	Infrared link to keyboard, mouse, voice commands
800 x 400	Centronics, RS-232	720K 3 1/2" diskette	5 or 10Mb	Diary, SuperCalc, SuperPlanner, SuperWriter	Microscreen on keyboard
640 x 256	Centronics, RS-232	720K 3 1/2" diskette	5 and 10Mb optional	Diary, SuperCalc, SuperPlanner, SuperWriter	Aimed at first-time user
640 x 256	Centronics, RS-232	720K 3 1/2" diskette	10Mb	Diary, SuperCalc, Con-DOS, SuperPlanner, SuperWriter	Intended as cluster controller for network
640 x 325	1 RS-232, 1 Centronics	1 or 2 x 360K	10Mb (optional)	GWBasic, Multimate	REVELATION emulates the Pick system
640 x 325	1 RS-232, 1 Centronics	1 or 2 x 360K	10Mb (optional)	GWBasic	REVELATION emulates the Pick system
640 x 400	1 Serial, 1 Centronics	1 x 360K 5.25"	10, 20, 40Mb	GWBasic	Runs up to 8 terminals, each with own processor card.
N/A	Centronics, 2 x RS-232	2 x 360K	No	WordStar, CalcStar, DataStar, ReportStar	A good, cheap, lightweight portable
640 x 400	Centronics	2 x 360K	10Mb (optional)	WordStar, CalcStar, InfoStar	A bit slow. Wide range of software
640 x 200	RS-232, Centronics	2 x 360K 5 1/4"	Optional	GWBasic, Perfect: Filer, Calc, Writer	Screen not included in price
640 x 200	Parallel, serial	2 x 360K	10Mb (PC 20)	GWBasic, MS DOS, DOS explained	Commodore's entry into the IBM-compatible market
640 x 200	Parallel, serial	360K	10Mb (optional)	—	The best-selling portable IBM clone
655 x 256	Modem, RS232/422, expansion bus.	1 or 2 3 1/2" 720K floppies	Not yet	Notebook (W/P), Diagnostics, Terminal	A major computer manufacturer enters the PC compatible fray.
N/A	RS-232, analog to digital	Microcassette, RAM disks	No	CP/M utilities MBASIC	Portable WordStar, diary available
400 x 640	RS232/488, Parallel	2 x 720K 5 1/4" floppies	10Mb (Ext)	MS DOS, Multifonts CP/M, Multifonts BASIC	IBM software compatible with Epson's multifonts capability
640 x 400 mono, 640 x 200 color	RS-232, Centronics	2 x 360K	10Mb (optional)	GWBasic, Tutorial	Three-year warranty
320 x 240	RS-232/RS-422, IEE-488	384K bubble, ext 360K floppy	Optional	Nil	—
512 x 390	RS-232, RS-232/422, HPIB, HP-HIL	2 x 710K 3 1/2"	15Mb optional	MemoMaker, Card File, Personal Application Manager	Touchscreen masks how good a machine this is
512 x 390	RS-232, RS-232/422, HPIB, HP-HIL	1 x 710K 3 1/2"	15Mb	MemoMaker, Card File, Personal Application Manager	Touchscreen masks how good a machine this is
128 x 480	RS-232, HP-IL	3 1/2" 710K	No	PAM, 1-2-3, MemoMaker, Terminal	Lightweight portable, software in ROM
320 x 200	Purchased separately	2 x 360K 5 1/4"	10Mb (optional)	BASIC, BASICA	The one that shaped the marketplace
640 x 200	Purchased separately	1 x 360K 5 1/4"	10Mb (optional)	BASIC, BASICA	An IBM PC shoe-horned into one box

Screen: Shows the type and size of the standard display screen (CRT = cathode ray tube; LCD = liquid crystal display; LED = light-emitting diode)

Resolution: The clarity of the picture on the screen is the result of the number of picture elements (pixels) or dots per sq. cm which form a tv screen. The horizontal measure is first, then the vertical.

I/O ports: Input/output, essentially lists what connectors come with the machine for communication with such devices as printers or modems.

Disk drives: The number of disks with a standard machine plus the storage capacity measured in kilobytes.

Hard disk: Some manufacturers offer a hard disk as an alternative to one of the floppy disk units. This column shows the capacities available.

Software: The programs supplied with the machine.

Comments: Special or unusual features.

This information is as supplied by the manufacturer or distributor and every attempt has been

HARDWARE BUYERS GUIDE

Make/ model	Price	CPU	Speed (MHz)	Memory min/max	Operating system	Exp. slots	Screen
IBM XT	\$7599	8088	4.77	256/640K	PC DOS, CP/M 86	5	Mono or color
ICL M6	\$4399	8088	5.0	256K	MU-CCP/M	3	12" 24 x 40/80 green/reverse
ICL M16	\$5999	8088	5.0	256K	MU-CCP/M	3	12" 24 x 40/80 green reverse
ICL M36	\$8999	8088	5.0	512K	MU-CCP/M	3	12" 24 x 40/80 green/reverse
ICL M46	\$10,799	8088	5.0	512K	MU-CCP/M	3	12" 24 x 40/80 green reverse
ITT Xtra	\$4250	8088	5.0	128/640K	MS DOS, CP/M 86	5	14" amber, green or color
Kaypro 10 Portable	\$4978	Z80	4.0	64K	CP/M 80	Nil	9" green screen
Kaypro 4	\$2838	Z80	4.0	64K	CP/M 80	Nil	9" green screen
Kaypro K-16	\$5870	8088	4.77	256/640K	MS DOS 2.1	4	9" green or mono
Kaypro K-16/2	\$4080	8088	4.77	256/640K	MS DOS 2.1	4	9" green or mono
Kaypro K-2000	\$3550	8088	4.77	256/768K	MS DOS 2.1	N/A	80 x 25 LCD
Logitec PC	\$2495	8088	4.77	512/640K	MS DOS 2.1	5	Mono or Color
MicroBee APC	\$1995	Z80A	3.75	128K	CP/M 2.2	Nil	Amber 80 x 24
Morrow MD11	\$5820	Z80A	4.0	128K	CP/M 3.0	Nil	12" green 24 x 80
Morrow Pivot	\$3650	80C86	3.5	128/512K	MS DOS 2.1	Nil	16 x 80 LCD
NCR PC6	\$6995	8088-2	8.00	256/640K	NCH DOS	8	Mono or color
NEC APC III	\$3565	8086-2	8.0	128/640K	MS DOS 2.11, UNIX	4	14" 25 x 80
NEC PC-8201A	\$695	80C85	2.4	16/32K	Proprietary	1	40 char x 8 lines LCD
Olivetti/AT&T M24	\$5030	8086	8.0	128/640K	MS DOS CP/M 86	7	25 x 80 green
Osborne 2100	\$3200	8088	4.77	256/640K	MS DOS 2.11	5	Purchased separately
Osborne 3	\$2500	80C86	3.5	512K	MS DOS 2.11	Nil	16 x 80 LCD
Osborne Executive	\$2950	Z80A	4.0	128K	CP/M 3.0	Nil	8" amber
Osborne PC-College	\$2590	8088	4.77	256/1Mb	MS DOS 2.11, PC DOS, CP/M 86, Concurrent PC DOS	8	Not included
Osborne Vixen	\$2850	Z80A	4.0	64K	CP/M 2.2	Nil	7" amber, 80 x 25
President 16-200	\$3900	8088	4.77	512/748K	MS DOS, CP/M 86	8	30 cm green, color 80 x 24
Sharp PC-2500	\$545	8-bit CMOS	N/A	5/21K RAM, 72K ROM	Proprietary 16K RAM card	Nil	4 x 25 LCD 150 x 32
Sharp PC-5000	\$3435	8088	N/A	128/256K	MS DOS 2.0	Nil	8 x 80 LCD
Sigma Elite PC	\$5999	8088	4.77	256/640K	MS DOS CCP/M	5	14" color RGB
Tandy M100	\$499	80C85	2.4	8/32	Proprietary	1	40 char x 8 lines LCD

made to ensure that it is accurate. *Today's Computers* takes no responsibility for errors or omissions, nor will the magazine accept responsibility for any loss or liability that may result. Other computer words or phrases in common usage:

ASCII code: A contraction for "American Standard Code for Information Interchange" which defines the codes for a character set that is used to achieve compatibility between data services.

Basic: A popular general purpose programming language for PCs.

Bit: An abbreviation for binary digit, the smallest possible unit for information. The most

common group size is 4 or 8 bits.

Byte: A measure of computer memory generally consisting of 8 bits. **CP/M:** A control program for micro-computers, a popular operating system.

DOS: A disk operating system (which IBM made the defacto standard) and which typically regulates space, keeps track of files and so on.

Icon: A graphical rather than verbal representation of a computer function.

Macro: A form in which a series of tedious or repetitive instructions can be programmed into a

PRESENTED BY

**SOURCEWARE**If you're an IBM PC user,
you're a Sourceware user.

Resolution (pixels)	I/O ports	Disk drives	Hard disk	Software	Comments
640 x 200	Purchased separately	1 x 360K 5¼"	10Mb	BASIC, BASICA	Hard-disk IBM PC
640 x 400 color optional	2 RS-232	2 x 764K	No	Multi-user, MS DOS, CP/M, CCP/M, Personal Basic	—
640 x 400 color optional	6 x RS-232, 1 synch.	2 x 764K	Optional	Multi-user, MS DOS, CP/M, CCP/M, Personal Basic	Supports 4 intelligent terminals and printer
640 x 400 color optional	6 x RS-232, 1 synch.	1 x 764K	10Mb	Multi-user, MS DOS, CP/M, CCP/M, Personal Basic	Multi-user (four tasks)
640 x 400 color optional	6 x RS-232	1 x 764K	20Mb	Multi-user, MS DOS, CP/M, CCP/M, Personal Basic	Add-on intelligent workstations optional at \$1249 each
640 x 200	N/A	2 x 360K	Optional	BASIC, BASICA	ITT's entry into the micro world
N/A	1 parallel, 1 serial	1 x 400K	10Mb	WordStar, Mailmerge, CalcStar, dBase II etc.	One of the few portables with hard disk
N/A	1 parallel, 1 serial	1 x 400K	10Mb	WordStar, Mailmerge, CalcStar, dBase II etc.	Portable, real-time clock
640 x 200	RGB & Comp, 1 parallel, 1 serial	1 x 360K 5¼"	10Mb	Micropro software range	Kaypro ruggedness plus a hard disk
640 x 200	RGB & Comp, 1 parallel, 1 serial	2 x 360K 5¼"	N/A	Micropro software range	Rugged IBM compatible transportable
640 x 200	RS232 Serial, expansion bus	1 x 720K 3½" floppy	N/A	N/A	Kaypro's first lap top portable
320 or 640 x 200	2 serial, 1 parallel	2 x 360K 5¼"	10Mb, 20Mb or 20Mb streamer (opt)	Forth-83	
512 x 256	RS-232, parallel	2 x 400K	10Mb opt, int	WordStar, Multiplan MBASIC Mailmerge	Australia's own low-cost CP/M system
720 x 288	2 x RS-232, 1 x parallel	1 x 384K	11Mb	New Word, SuperCalc, database, etc.	Fast hard disk, good value for money
480 x 128	RS-232, Centronics,	2 x 360K	No	Appointments, Terminal Emulator, calculator	The 16-bit successor to the Osborne 1
640 x 400	1 serial, 1 parallel	1 x 320K	2 x 20Mb	GW BASIC, NCR DOS, Help, Tutor	NCR's high speed entry into PC marketplace.
640 x 400	Centronics, RS-232	2 x 640K	10Mb	Nil	High-grade IBM-compatible
240 x 64	RS-232, barcode, parallel	No	No	BASIC in ROM	Similar to Tandy 100, but more memory
640 x 400	Parallel, serial	2 x 360K or 720K	10Mb optional	No	Fast processor; M21 transportable available
N/A	RS-232, Centronics	2 x 360K	10Mb or 20Mb	Not decided	Osborne's first desktop
480 x 128	RS-232, Centronics	2 x 360K	No	Appointments, Terminal Emulator, calculator	The 16-bit successor to the Osborne 1
—	2 RS-232, 1 Centronics	2 x 200K or 400K	11.2Mb	WordStar, Mailmerge, SuperCalc, MultiLedger etc.	Development of the famous Osborne 1
640 x 200	Parallel, serial	2 x 360K floppies	10 or 20Mb (opt)		Aimed at educational market. Price excludes monitor.
640 x 240	RS-232, Centronics,	2 x 390K	Optional, external	WordStar, Mailmerge SuperCalc, Media Master etc.	Osborne's smallest portable. Multiple disk formats
640 x 704	1 RS-232, 1 Centronics	2 x 360K	Up to 20Mb	Perfect range, 1-2-3 or Open Access	IBM-compatible
150 x 32	Serial, cassette interface	Nil	No	Basic spreadsheet, phone directory	—
640 x 80	RS-232	External	No	GW BASIC	128K bubble memory (opt), clip-on thermal printer
640 x 400	Parallel, serial	2 x 360K	Optional	Open Access, Basic	XT version available
240 x 64	RS-232, barcode, parallel	Optional	No	BASIC in ROM, dialler, diary, text	Probably the most popular lap portable

computer and made to run with one keystroke.

Menu: The screen display to show operations allowed by the program.

Modem: Modulator-demodulator, the link between a telephone and a computer.

MS/DOS: An operating system for 16-bit systems.

LSI: Large scale integration or accumulation of a large number of circuits on a single chip.

CMOS: Complementary metal oxide semi-conductor, a type of integrated circuit that consumes less power and expends less heat.

ROM: Read only memory which cannot be altered during normal computer use.

RAM: Random access memory, storage of information in the main memory of the computer which can be lost if the machine is switched off.

Spreadsheet: An application package, the computerised version of the accountants columnar paper though more flexible.

User friendly: A system designed to be easy and logical for a beginner.

Boot: Getting the computer going by using the program in the ROM.

HARDWARE BUYERS GUIDE

Make/ model	Price	CPU	Speed (MHz)	Memory min/max	Operating system	Exp. slots	Screen
Tandy TRS-80 Model 2000	\$4799	80186	8.0	128/768K	MS DOS	4 slots	80 x 25 mono or color
Tandy Model 4 Portable	\$1999	Z80A	N/A	64/128K	TRS DOS	Nil	80 x 24 mono
Tandy 16B	\$9999	68000 & Z80	6 & 4	256K/15Mb	TRS DOS, Zenix	4	80 x 24 green
Tandy 1000	\$1950	8088	4.77	128/640K	MS DOS 2.11	3	30 cm green or color
Telecom Computerphone	\$2950	68008	13.5	128K	Modified QDOS	ROM, RAM packs	9" mono or 14" color
Televideo TPC II	\$5140	8088	4.77	256/640K	TeleDOS, PC DOS	1	23 cm amber
Televideo PC	\$4554	8088	4.77	256/640K	MS DOS 2.11, CCP/M, Revelation	1 int, 6 via ext chassis	35 cm green or 30 cm color
Televideo XT	\$7877	8088	4.77	256/640K	TeleDOS, PC DOS	1	35 cm green
TI Professional Computer	\$3995	8088	5.0	128/768K	MS DOS 2.11	5	12" mono or 13" color
TI Pro-Lite	\$6500	80C88	N/A	256/768K	MS DOS	2	80 x 25 LCD
Toshiba T1100	\$2995	80C88	4.77	256/512K	MS DOS, CP/M 86	N/A	LCD
Toshiba T1500	\$3950	8088	4.77	128/640K	MS DOS CP/M 86	3	Color monitor or LCD
Zenith Z100 PC	\$5395	8088/8085	5	192/768K	CP/M 2.2, MS DOS 2.11, CP/M 86, MP/M 86, CCP/M 86	5	30 cm green/amber
Zenith Z150	\$4995	8088	8	320/640K	MS DOS 2.11, PC DOS	7	30 cm hi-res amber

SOFTWARE UPDATE



Data Management

LE'VZ D'BASE

A simple disk-based database for an expanded VZ200 or VZ300. Printing of mailing labels is supported.

Requirements: VZ200 (expanded)/VZ300
Supplier: Vsoftwarez (07) 371 3707
Price: \$98

MICRO MAGPIE

A database operated by pop-up menus, supporting multiple files, complex calculations on data and mailing list and stock control templates.

Requirements: Commodore 64 and disk drive
Supplier: Computamart (09) 444 6385
Price: \$89.95

K-REPORT

K-REPORT is a report generator for the data management program KnowledgeMan. Users can design templates on the screen from within KnowledgeMan and then generate the report.

Requirements: KnowledgeMan 1.07
Supplier: Data Base Management Services (03) 523 5947
Price: \$393

K-C

A O language interface for KnowledgeMan consisting of a library of C functions for defining and manipulating KnowledgeMan data tables from a C program.

Requirements: KnowledgeMan and Lattice C
Supplier: Data Base Management Services (03) 523 5947
Price: \$1495

Financial

PAYROLL ONE

A payroll package for small business that will print payslips and group certificates on demand. The

package can support 999 employees and up to 20 cost centres.

Requirements: MS-DOS
Supplier: Integrity Business Software (03) 529 4500
Price: \$495

WORDSTAR 2000 — Printer Upgrade Disk

WORDSTAR has been upgraded to support another 41 printers including the HP Laserjet, Corona Laser, Xerox 2700 Laser and Toshiba P1351 printers.

Requirements: MS-DOS
Supplier: Imagineering (02) 212 1411
Price: \$10

WORDSTAR 3.3 — Printer Upgrade Disk

WORDSTAR 3.3 has been upgraded to support five new printers, including the HP Laserjet (non-proportional fonts), HP Thinkjet, Diablo ECS, IBM Quietwriter and Wheelwriter printers.

Requirements: MS-DOS
Supplier: Imagineering (02) 212 1411
Price: \$10

MICRO WORDCRAFT

A version of Wordcraft for the Commodore 64 with full text control, "what you see is what you get" screen display and support for most common printers.

Requirements: Commodore 64
Supplier: Computamart (09) 444 6385
Price: \$99.95

NIX TEXT EDITOR

A low-cost full-screen editor with similar commands to Wordstar. It supports macros, split-screen editing of two files and keyboard command mapping.

Requirements: CP/M, MS-DOS or TurboDOS
Supplier: JED Microcomputers (07) 762 3588
Price: \$50

Integrated Packages

SMART 2.0

SMART 2.0 features database, word processing and

spreadsheet with graphing. This upgrade provides users with a large, fast spreadsheet.

Requirements: MS-DOS
Supplier: Sourceware (02) 411 5711
Price: \$549

Communications

CHIT-CHAT

A micro to mainframe communications program supporting auto-dial, XModem file transfer protocol, online help, Viatal and automatic execution of batched commands.

Requirements: CP/M or MS-DOS
Supplier: Personal Computer Services (02) 923 2899
Price: \$325

NATURAL/CONNECTION 2

A micro to mainframe communications link between an IBM PC and the ADABAS natural fourth generation language. Data can be formatted for use by dBase and Framework.

Requirements: IBM PC/XT/AT with 3278/9 emulator board.
Supplier: SPL (02) 498 8555
Price: \$750 (PC), \$15,000 (host)

Job Specific

MRPS

MRPS controls manufacturing planning and control functions, capacity and production scheduling, planning, raw material planning and purchasing and inventory control.

Requirements: IBM System 36 or 38
Supplier: Taubert and Associates (02) 438 4744
Price: \$25,000-\$90,000

MACMAN

MACMAN is a modular manufacturing management program supporting all aspects of a manufacturing operation, from order entry to production engineering to accounting.

Requirements: Perkin Elmer computer under Unix

PRESENTED BY



If you're an IBM PC user,
you're a Sourceware user.

Resolution (pixels)	I/O ports	Disk drives	Hard disk	Software	Comments
640 x 400	1 serial, 1 Centronics	2 x 720K	10Mb optional	Multiplan, Multimate, dBase II, BASIC	A formidable machine, Tandy's best
240 x 640	Parallel	2 x 156K	15Mb optional	Scriptit, PFS:file, PFS:Calc	CP/M compatible. Overpriced portable
N/A	2 x RS-232, parallel	2 x 1250K 8" floppies	15Mb optional	Operating system	—
640 x 200	Parallel, light pen	1 x 360K 3½"	Optional	O/S, Deskmate integrated software	Color graphics standard, but not second drive or screen
256 x 512	1 RS-432	2 x 100K 3½"	No	Quill, Abacus, Archive, Easel, BASIC	Built-in phone, phone database, auto-answer
640 x 240	1 RS-232, 1 Centronics	2 x 360K	No	GW BASIC, TeleCalc, TeleWrite, TeleDBMS	Transportable with graphics
640 x 200	Parallel, serial	2 x 360K	No	GW BASIC, TeleCalc, TeleWrite, TeleDBMS	Tilt screen desktop, optional color
640 x 240	1 RS-232, 1 Centronics	1 x 360K	10Mb internal	GW BASIC, TeleCalc, TeleWrite, TeleDBMS	Optional 20Mb, hard disk color
720 x 300	1 parallel	2 x 360K	10 and 20Mb (optional)	BASIC, BASICA	Better than the IBM, but not IBM-compatible
640 x 200	Parallel	2 x 156K	15Mb optional	Scriptit, PFS:File, PFS:Calc	—
640 x 200	Parallel	2 x 360K	10Mb optional	Basic, MS DOS 2.11	Lightweight IBM-compatible transportable
640 x 200	RBG, parallel, ext. floppy	1 x 720K 3½"	No	Basic, MS DOS 2.11	IBM-compatible lap portable. Eight-hour battery life
640 x 225	1 parallel, 2 RS-232	2 x 360K 5¼"	10Mb optional	Lotus 1-2-3, CP/M, MS DOS	Expandable to 50 Mb, Lan & Multi-user options. \$100 Bus.
720 x 350	1 parallel, 1 RS-232	2 x 360K	10Mb (optional)	MS DOS 2.11	Runs Symphony in base configuration, portable avail.

Supplier: Perkin Elmer (02) 887 1000
Price: \$5,000-\$20,000

FAMILY TREE AND FAMILY HISTORY

A program to collect information on family trees and print a family tree chart.

Requirements: Apple II

Supplier: Imagineering (02) 212 1411
Price: \$99.95

ESTIMATOR II

A series of programs to build estimates. It combines spreadsheet and word processing features and is designed for the building and engineering industries.

Requirements: MS-DOS or CP/M-86

Supplier: Lawson Banner Computers (03) 20 4300
Price: \$5000

TIMewise

TIMewise is a desk organiser and resource scheduling package, combined with the Sytek word processing system.

Requirements: MS-DOS

Supplier: Sybiz Software (08) 333 0968
Price: \$345

The following packages were listed incorrectly in the latest edition of the *Australian Software Guide*, published with the September edition of *Today's Computers*.

CHARTS

A client services and administration system for public accountants comprising client accounting, time costing and debtors and sales analysis.

Requirements: Unix, MBOS, BBM, Thorov.

Supplier: Intech Software (02) 73 2831

Price: \$3500 per module/single user, \$8000 (3 module multi-user)

NAPS

The newsagents' account processing system supports 2000 customers for newspaper delivery.

Requirements: NEC APC.

Supplier: Fletcher DP Services (03) 537 2811; Bay-side Computer Systems (03) 781 4011
Price: \$7800 (including hardware)

Relax..

...and enjoy more accurate keying.

It's almost too good to be true! You can now get through your work quicker and still feel relaxed and refreshed when you use the MEDY Typist Helper.

COMFORT AND CORRECT POSTURE

A choice of adjustable stands give correct height and positioning avoiding strenuous neck movement and continual refocussing of the eyes. You enjoy a pleasant relaxed posture; reducing neck and back ache, and minimising eye strain.

YOU WON'T LOSE YOUR PLACE

Foot pedal control lets you move the copy up or down at the touch of a toe, so the line you're typing is always in the same place - highlighted by a red line, magnified and illuminated. You won't have to re-read paragraphs to find

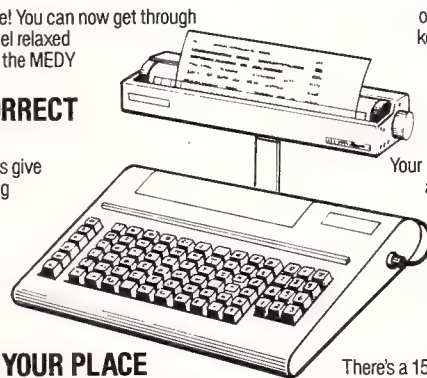
out where you were, and you can keep your hands on the keyboard at all times - no more rulers to move up and down.

EASY ON THE EYES

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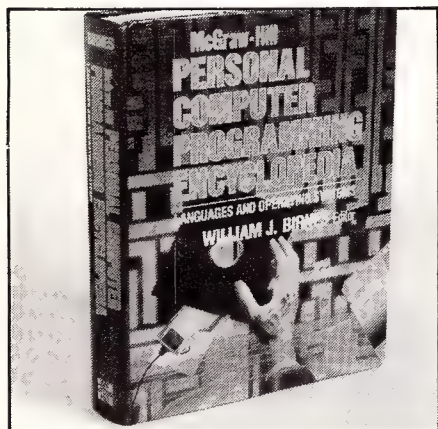


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One stop trouble shooter

Personal Computer Programming Encyclopedia McGraw Hill, 1985, \$164.95.

Imagine you run the EDP department of a large company with lots of different microcomputers and a variety of software.

No matter what questions you may be asked, the answers will probably be found in the recently released "*Personal Computer Programming Encyclopedia*".

This 696 page magnum opus covers a wide variety of topics, from high level languages and operating systems down to hardware specifications for a variety of products.

The first three chapters cover program design and architecture, the principles of effective programming and special applications software.

Chapter five covers no less than 13 micro-computer processors, supplying for each of them the number and function of the connector pins, the names and functions of the internal registers, the flags and what they do and a summary of all the machine code instructions.

The encyclopedia looks at 27 high level languages.

Also included are the command languages for a variety of programs including *dBase II*, *Lotus 1-2-3*, *Framework* and *Multiplan*. The explanations range from fair to excellent, though *Framework* and *dBase II* probably get the best treatment because all the commands within their built-in languages are individually listed.

Next topic is operating systems and here the book suffers by not being willing to dive quite deep enough.

As a finale, the book lists specifications for a range of machines including the IBM PC and compatibles, CP/M computers, the Commodore VIC-20 and C-64 and the Apple family. Accompanying each of these — the Macintosh excepted — is a memory map, which is a useful addition.

At \$164.95, this book is not cheap and with more than 20 contributors, varies in quality. However if you have an EDP Department this book will prove invaluable as a one-stop reference.

— Gary Ross

dBase II and III made easy

Understanding and Using dBase II & III by Rob Krumm, Brady Communications Co. (Prentice-Hall \$37.95)

There is an old show-biz trick of always saving the best 'til last. Well, now they are starting to do it with computer books.

The (in)famous dBase II and its younger brother dBase III have been driving programmers nuts for quite a few years.

Now, when the 'good old days' are gone and our book-shelves groan under the weight of dBase books, dBase manuals, and pirated copies of dBase utilities programs, Rob Krumm has the hide to come out with a book that makes learning the language seem simple.

Anyway, to cut a long story short, if you want to learn dBase then Krumm's is the best book I've come across. I think I learned more simple tricks and ways to overcome difficulties in one solid session of reading this book than I did in my first few months of programming with the language.

Krumm starts from basics, and takes you systematically through to quite sophisticated command language programming. In a very logical way he runs explanations about version II in parallel with version III, and shows the alternative ways of achieving the same objectives with the different programs.

It is a major achievement to have written such a good book on such a difficult subject.

— Stewart Fist

IBM v Mac

I felt that I must indicate several misconceptions which readers of your magazine may have been given by your recent article, "IBM PC v. Apple Macintosh" (Diane Burns and Sharyn Venit, *Today's Computers*, August 1985).

In the comparison of word processors, the authors make the comment: "that these common formatting commands (bold text, italics, etc) are available only through a menu on the Macintosh is a limitation of the word processor's program code rather than a fault of the hardware". These commands are available from the keyboard in the Macintosh version of Word, for example, where bold text is selected by Command-Shift-B (holding down the Command and Shift keys while typing B).

The reason that these keyboard equivalents do not appear on the menus is that the procedures for creating text menus and the MenuKey function in the Menu Manager ignore case. Thus the Command-Shift-S for selecting shadowing would be mapped on to the Command-S for saving of files by the routine.

The second misconception which the article may have given is about the speed of the Macintosh disk drives. The authors' statement that, "One of the most talked-about features of the Macintosh, on the negative side, is its incredibly slow disk file I/O" is correct in that the speed of the drives is much talked-about. The statement gives the impression that the Macintosh drives are slow.

Using the timings given in the article's benchmarks, the average time for a disk operation (loading a program, saving a file, opening a file) is about 20 seconds. On the IBM PC, this average time is more than 27.5 seconds, which is almost 40 per cent slower than the Macintosh.

The reason that the Macintosh's disk I/O is complained about is that it is comparatively slower than the rest of the Macintosh system. As an example, the standard Byte benchmark, the Sieve of Eratosthenes (a method for identifying prime numbers) depending on the language used, runs from 150 per cent to 250 per cent slower on the IBM PC than on the Macintosh, thus the 40 per cent improvement in disk I/O speed means that the disks are slow when compared with the rest of the Macintosh system, but they are quite fast when compared

with the IBM PC disk drives.

I feel that the authors have erred in that what they have said is true, but misleading.

Mark Dancer
Annerley, SA

Thank you but...

Thank you for your excellent magazine providing just the sort of information which I need for comparison analysis of hardware and software.

May I, however, point out an inconsistency in your August issue. The many features of the Tulpi modem explained and reviewed in the Benchtests article showed it to be an "intelligent" modem. It has been under manufacture and available in Australia for some months with some notable corporations on its buyers' list. Inconsistently, in the "Briefly" comments, you state that "Australia's first intelligent modem has been released by Shuttle..."

D.M. Collins
Director, Continental Venture
Capital Limited

The editor says: We stand corrected.

Eternally vigilant

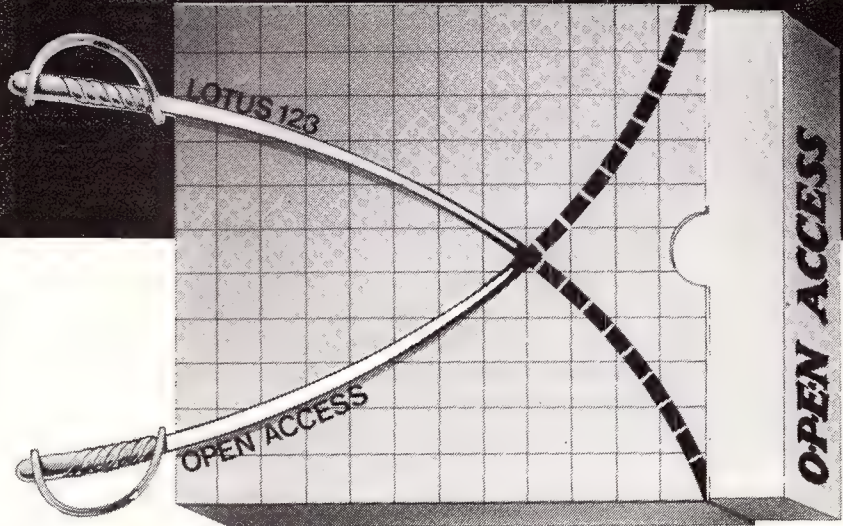
I appreciated your article on repetitive strain injury in the August 1985 issue of your Journal and particularly the diagram on good work station principles shown on page 74.

The same issue does, however, feature two photographs on page 5 (Ericsson PC competition winner Peter Vroom and the SECV's David Leong and Ray Diggins) which both show poor work station practices, in particular the forearms and hands of the operators are not horizontal and in both cases the hands are sloping upwards.

I suggest you should be eternally vigilant in ensuring that all examples of computer work stations shown in your magazine conform with good practice in view of the major significance of workers' compensation claims with RSI.

Dr. P. G. Alfredson
Chief, CSIRO Division
of Energy Chemistry, NSW

We're about to cross swords



OPEN ACCESS already No 2 top selling PC software

The world's best integrated PC software package is on its way to the top of the Australian software charts. Focus Research listed Open Access as No. 3 seller in June and No. 2 seller in July. As they reported:

"One of the most interesting features of the Australian software market in July was the high position gained by Open Access, which increased sales by 10% despite a general downturn of the market.

"Lotus 1-2-3 maintained No. 1 position, although (its) sales in July decreased by 41%.*

And no wonder. Already more than 2000 users in Australia are quietly humming the praises of Open Access as they use its versatile word processor, 3D graphics, data base, time management and spreadsheet modules to plan, run and manage their business functions.

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* Focus Research Micro StoreBoard, Aug. 1985

COMING UP

Edited by Julie Power
Computer shows, conferences and seminars here and abroad

Title	Date	Place	Organisers	Contact
Australia				
SAS Users Group Conference (SUGA)	October 24-25	Menzies Hotel, Sydney		Ph: (02) 908 2244
Computer Expo '85	November 6-9	Crest International Hotel, Brisbane	Robert Woodland Exhibitions	Ph: (07) 372 3233
PACEX '85	November 6	RAS Showground, Sydney	Thomson Exhibitions	Ph: (02) 525 2811
Infotex	November 6-8	National Exhibition Centre, Canberra	Infotex	Tlx: AA62281 Ph: (062) 49 7799
Royal Australian Institute of Public Administration National Conference	November 13-15	Sydney	Australian Convention Management Services	Tlx: AA176765 Ph: (02) 29 1431
Introduction to Microcomputing for Business	November 4-8	University of NSW	Dept. of Information Systems	Ph: (02) 697 5401
Accounting Information Systems Workshop	November 15 & 22	Swinburne College, Melbourne	Australian Computer Society	Ph: (03) 417 6220
Calite 85	December 1-4	World Trade Centre, Melbourne	RMIT & Latrobe University	Ph: (03) 660 2529
First Australian Online Information Conference	January 20-22	Hilton International, Sydney	Australian Convention Management Services	Ph: (02) 29 1431
Finance 86	February 18-21	Royal Exhibition Building, Melbourne	BPI Exhibitions	Tlx: AA21417 Ph: (02) 266 9799
PC86, The Sixth Australian Personal Computer Show	March 9-17	Centrepont, Sydney	Australian Exhibition Services	Ph: (03) 267 4500 Tlx: 39329

Overseas

Informatic '85	October 21-24	Amsterdam	IMC	Tlx: 904100 Ph: (301) 983 0604
WORLDCOM '85	October 22-25	San Francisco	International Council for Planning and Information	Ph: (212) 582 3970
PerCompAsia 85	October 21-25	Singapore	Australian Exhibition Services	Tlx: 24591 Ph: (01) 486 1951
1985 EUSIDIC	October 29-31	Bath, England	EUSIDIC	Ph: (01) 546 7968
Systems '85	October 28-November 1	Munich, Germany	Microfocus	Ph: (415) 856 4161
Computer Storage	October 30-November 1	Tucson, Arizona	Dataquest Inc	Tlx: 1719773 Ph: (408) 971 9000
Technical and Business Computer Systems	November 3-6	Sheraton El Conquistador, Tucson, Arizona	Dataquest Inc	Tlx: 1719773 Ph: (408) 971 9000
1986 South East Asia Regional Computer Conference	November 17-21	Bangkok, Thailand	SE Asia Regional Computer Confederation	Tlx: 84956 Ph: 277 7041
CommuniTech & Computer 85	November 18-21	Kuala Lumpur	Andry Montgomery Group	Tlx: 24591 Ph: (01) 486 1951

If you would like your event listed in our directory, please send full details to Julie Power, *Today's Computers*, 26-28 Hunter Street, Sydney 2000.

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Money Watch It gives you the edge.

Software to float

Another computer supplier is to be publicly floated within the next two months, but this time it's a software publisher. Software Corporation of Australia (SCA) has been preparing for the move for some time now and apparently the float is being underwritten by a SA stockbroking firm. You know where you heard it first . . . Marmaduke's Marauders strike again. While on the subject, Marmaduke hears yet another hi-tech float could see some smart money made.

Hot on the heels of a newly opened \$3.5 million HQ in Sydney, the communications and hi-tech entrepreneur Scitec Corporation is set to list on the Sydney Exchange next year.

Products like its new 2400 baud business security modem are winning corporate sales. Watch for an announcement from its MD, Moshe Yerushalmy.



By
**Marmaduke
Megabyte**

IBM is on a witch-hunt to try to stamp out unauthorised IBM PC dealers throughout the country. It seems that about 3000 IBM PC installations over the last year cannot be accounted for and according to the Duke's IBM sources, the company will not honor warranty conditions because they were not purchased through authorised channels.

However, under the Trade Practices Act, IBM cannot legally prevent unauthorised dealers from selling its PCs and the company is handling it in other ways. Marmaduke understands 12 small dealers have already been "defrocked" and others can prepare for a campaign that outlines warranty conditions on IBM equipment and says

unauthorised supply invalidates the company's warranties.

Hewlett Packard, itself a giant in technology, has resisted suggestions it should fall in behind Big Blue and produce a me-too PC . . . until now, that is. Marmaduke recently sent his top tipster to investigate the compatible offering from HP. What he found in Melbourne's outer suburban "pleurisy plains" was the only unit in captivity at the time, a very sporting job, badged as Vectra. It will be available about the time you read this in three configurations — models 25, 35 and 45.

The 25 and 35 have 256K of RAM with an optional 640K, but the larger memory is

standard on the model 45. A 360K 5.25-inch floppy can be upgraded to 1.2 Mb on the higher models. The machine's chassis design allows twin 3.5-inch disks and either 20 Mb or 40 Mb internal hard disks to be stacked.

All models are propelled by the 80286 chip running at 8 MHz, and the 80287 chip running at 5.33 MHz is optional.

In demonstration the HP appeared quicker and quieter than the IBM PC (30 per cent is the claimed advantage in speed, weight and size). The touch-screen, although working well, did nothing for screen resolution, but further comment must wait until next month when The Duke's employers promise a no-hold-barred analysis of Vectra.

While we are on the subject, Marmaduke expects to get his paws on the IBM's new entry level machine, the JX, for a benchtest at the same time.

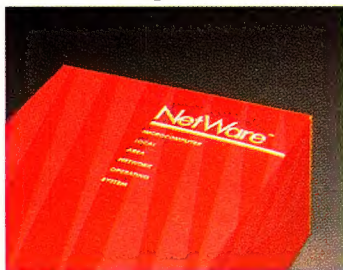


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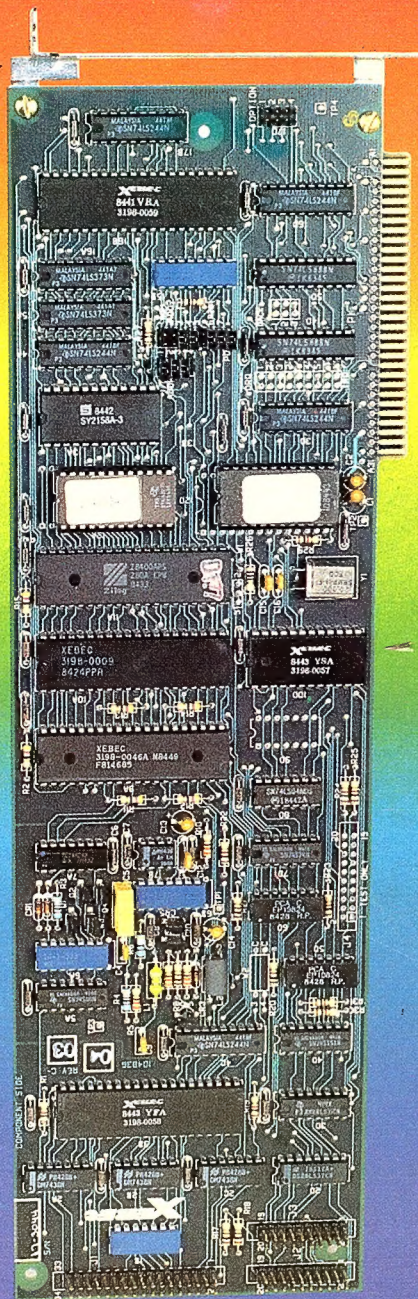
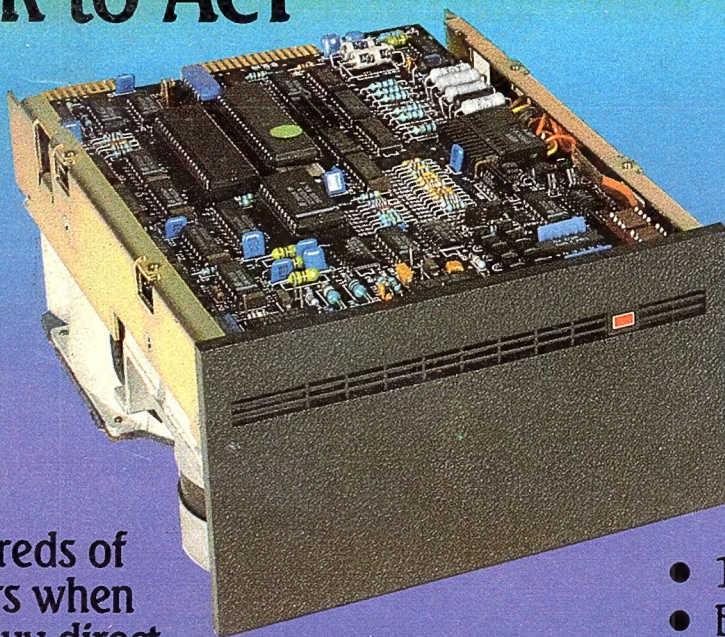


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